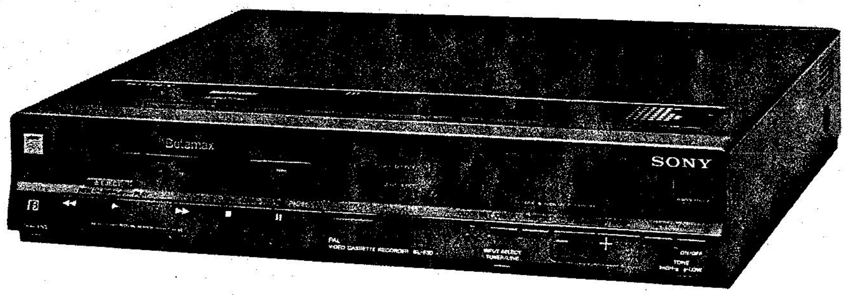
SL-F30E/UB/EC
RMT-230/231

SERVICE MANUAL

AEP Model
UK Model
E Model
REMOTE COMMANDER
RMT-230

EC Model
REMOTE COMMANDER
RMT-231



November, 1984

711B2 CHASSIS

This manual contains the adjustment method.

SPECIFICATIONS

System

Video recording system
Rotary two-head helical scanning
Video signal CCIR standards, PAL colour
Aerial input 75-ohm, asymmetrical aerial socket
Channel coverage

SL-F30EC
VHF: Western European channels E2-U20
UHF: Western European channels E21-E68
(Up to 30 programmes can be preset.)

SL-F30E
VHF: Western European channels E2 - E12
UHF: Western European channels E21 - E68
(Up to 12 programmes can be preset.)

SL-F30UB
UHF: European channels 21-68
(Up to 12 programmes can be preset.)

RF output signal
UHF channels 30 to 39 (variable)
75 ohms, unbalanced

Video

Input VIDEO IN: BNC connector
1.0 V $^{+1.0}_{-0.5}$ V (p-p)
75 ohms, unbalanced,
sync negative

Output VIDEO OUT: BNC connector
1.0 V (p-p) ±0.1 V (p-p)
75 ohms, unbalanced,
sync negative

Horizontal resolution
260 lines

Signal-to-noise ratio
Colour: Better than 40 dB
B/W: Better than 43 dB

Audio

Input AUDIO IN: phono jack
47 kilohms, −10 dBs
(0 dBs = 0.775 V rms)

Output AUDIO OUT: phono jack
Load impedance less than 10 kilohms
−10 dBs with 47 kilohms load, unbalanced

Frequency response
50 Hz to 10 kHz

Signal-to-noise ratio
40 dB

Audio distortion
Less than 4 % at 400 Hz

— Continued on next page —

Beta
VIDEO CASSETTE RECORDER
SONY®

MICROFILM

Consumer VIDEO

Tape transport

Tape speed	18.73 mm/sec.
Maximum recording time	2 hours 10 min. (with Sony L-500 cassette) 3 hours 15 min. (with L-750)
Fast forward/rewind time	Within 5 min. (with L-500)

Timer

Clock	Crystal lock
Time indication	24-hour cycle
Timer setting	Only for recording 1 event/3 weeks, adjustable for any day or for all 7 days of the week

General

Power requirements	SL-F30EC : 220 V AC ± 10 %, 50/60 Hz SL-F30E (AEP MODEL): 220 V AC ±10%, 50/60 Hz SL-F30E (E MODEL): 110 - 127 V or 220 - 240 V AC adjustable, 50/60 Hz SL-F30UB : 240 V AC, 50/60 Hz
Power consumption	38 W
Storage temperature	-20° C to + 65° C (-4° F to + 149° F)
Operating temperature	5° C to 40° C (41° F to 104° F)
Dimensions	Approx. 430 × 80 × 382 mm (w/h/d) (17 × 3¼ × 15⅛ inches) including projecting parts and controls
Weight	Approx. 8.2 kg (18 lbs 1 oz) net

Accessories supplied

75-ohm coaxial cable for recorder to TV connection (1)
Remote Commander RMT-231 (SL-F30EC) or RMT-230 (SL-F30E, SL-F30UB) with two IEC designation R6 batteries (1)
RF channel adjustment screwdriver (1)

Design and specifications subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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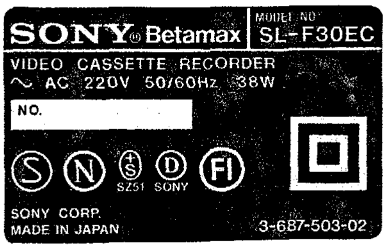
1-1. MODEL IDENTIFICATION

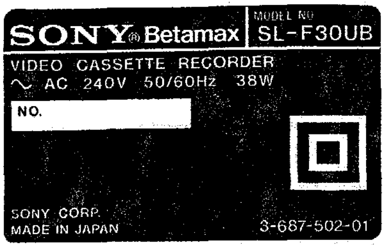
– Specification Label –

EC MODEL



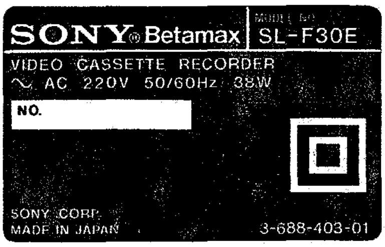
SONY® Betamax | MODEL NO. SL-F30EC
VIDEO CASSETTE RECORDER
∿ AC 220V 50/60Hz 38W
NO.
SZ51 SONY
SONY CORP.
MADE IN JAPAN 3-687-503-02

UK MODEL



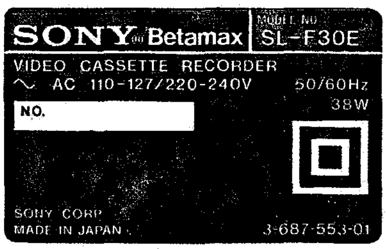
SONY® Betamax | MODEL NO. SL-F30UB
VIDEO CASSETTE RECORDER
∿ AC 240V 50/60Hz 38W
NO.
SONY CORP.
MADE IN JAPAN 3-687-502-01

AEP MODEL



SONY® Betamax | MODEL NO. SL-F30E
VIDEO CASSETTE RECORDER
∿ AC 220V 50/60Hz 38W
NO.
SONY CORP.
MADE IN JAPAN 3-688-403-01

E MODEL



SONY® Betamax | MODEL NO. SL-F30E
VIDEO CASSETTE RECORDER
∿ AC 110-127/220-240V 50/60Hz 38W
NO.
SONY CORP.
MADE IN JAPAN 3-687-553-01

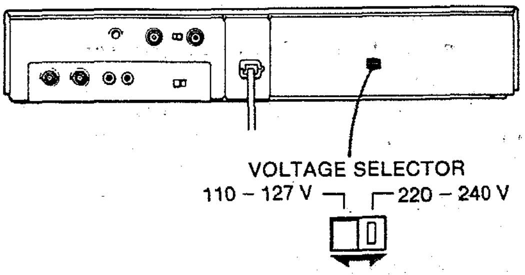
NOTE ON TYPES OF SL-F30EC, SL-F30E AND SL-F30UB

This service manual covers four types of models: SL-F30EC, SL-F30E(AEP), SL-F30E(E) and SL-F30UB.
The principal defferences among the models are indicated in the following table. The differences are clearly mentioned in the text as required.

Model	Operating voltage and frequency	Programmable stations	Supplied Remote Commander
SL-F30EC	220V AC, 50/60Hz	30	RMT-231
SL-F30E AEP model	220V AC, 50/60Hz	12	RMT-230
SL-F30E E model	110–127V or 220–240V AC adjustable, 50/60Hz	12	RMT-230
SL-F30UB	240V AC, 50/60Hz	12	RMT-230

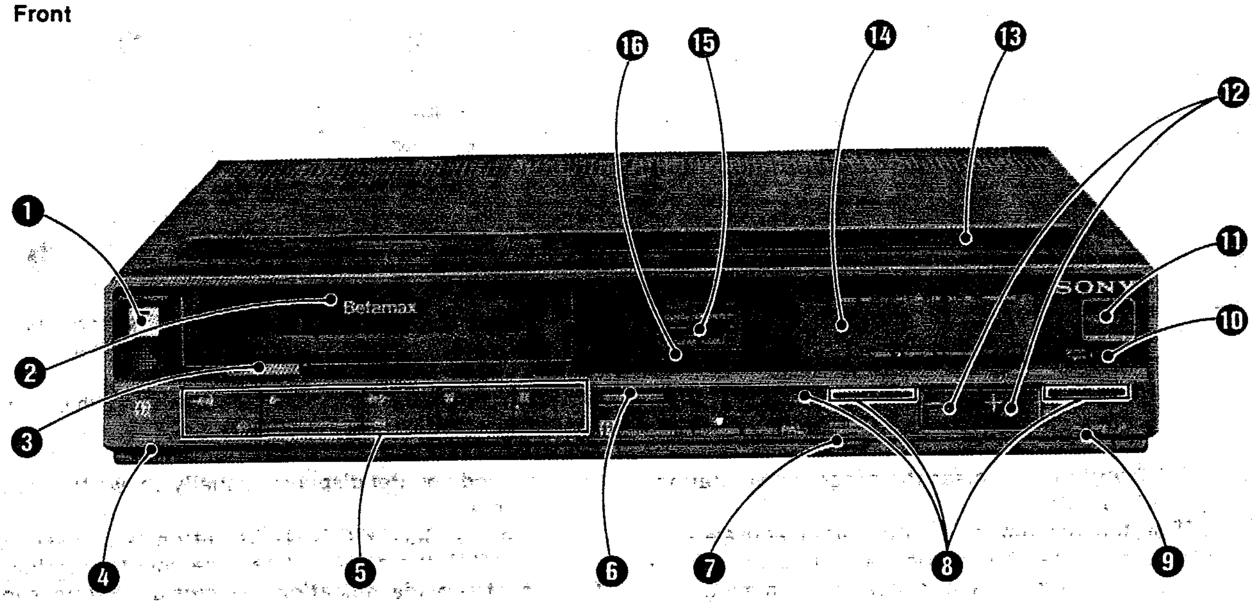
For the SL-F30E E model

Before operating the unit to the power source, set the voltage selector at the rear to the appropriate position according to your local power supply.



1-2. LOCATION AND FUNCTION OF CONTROLS

Front



❶ ON/STANDBY button and indicator
Press to turn on the unit. The indicator will light up. Press again to turn it off.
The timer section will continue to operate and the time will be displayed even if the ON/STANDBY button is off.

❷ Cassette compartment
Insert a cassette after turning on the recorder. The ▣ indication appears on the display window when a cassette is inside.

❸ ≜ EJECT button
Press to remove the cassette. This button does not function when the recorder is turned off.

❹ TRACKING control
If streaks or snow appear during the playback of a tape recorded on another recorder, turn this knob to obtain the best possible picture.

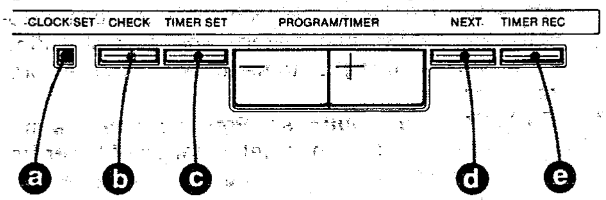
❺ Function buttons

- ◀◀ REW button : Press to rewind the tape. Also used for the reverse picture search, skip scan and auto play operation.
- ▶ PLAY button : Press to play the tape back. Also used for auto play operation.
- ▶▶ FF button : Press to advance the tape rapidly. Also used for the forward picture search and skip scan operation.
- ■ STOP button : Press to stop the tape.
- ❚❚ PAUSE button : Press to stop the tape for a moment during recording or playback. A still picture will be seen during playback. Press again to release the pause mode.

❻ ● RECORD button
Press to start recording.

❼ INPUT SELECT button
Press to select the programme to be recorded.
LINE: for recording signals connected to the VIDEO IN and AUDIO IN jacks.
TUNER: for recording TV programmes.

❽ Buttons for clock and timer setting



- ⓐ **CLOCK SET button:** Press to initiate clock setting.
- ⓑ **CHECK button:** Press to check timer settings.
- ⓒ **TIMER SET button:** Press to initiate setting of timer recording.
- ⓓ **NEXT button:** Press to advance to the next item to be set during clock or timer setting.
- ⓔ **TIMER REC ON/OFF button:** Press to activate timer recording. Press it again to deactivate timer recording or quick timer recording in timer standby mode or while recording.

❾ TONE selector
Normally, set to HIGH. If the high frequencies of playback sound seem exaggerated, set to LOW.

❿ QUICK TIMER button
Press to set the recording duration up to 4 hours in units of 30 minutes.

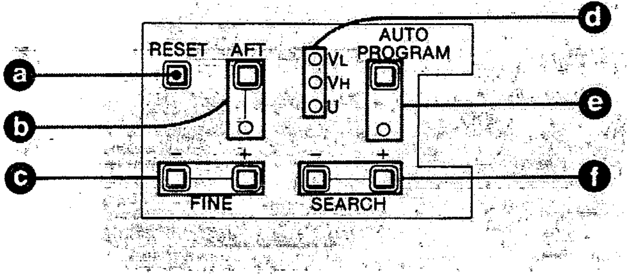
⓫ REMOTE SENSOR
Detects the remote control signal transmitted from the supplied Remote Commander.

⑫ PROGRAM/TIMER +/− button

Press + to advance or − to reverse the programme numbers. Also used for clock setting and timer setting.

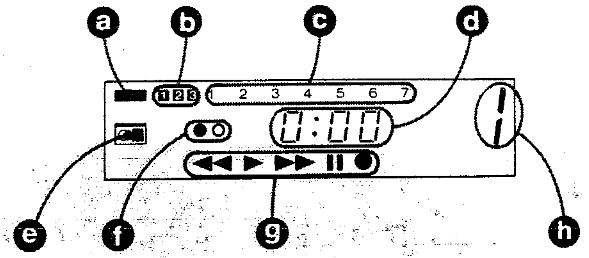
⑬ Tuning compartment

All the switches and buttons for programming stations are in this compartment.



- ⓐ **RESET button:** To clear the programmed station, press this button.
- ⓑ **AFT button and lamp:** The AFT circuit activates automatically after the stations are tuned and memorized with automatic and manual programming. The AFT lamp will illuminate. If you wish to restore the AFT on the channel which has been finetuned manually with the FINE buttons, press the AFT button.
- ⓒ **FINE + and − buttons:** Press to fine tune the station.
- ⓓ **Tuning indicator:** (for the SL-F30E and the SL-F30EC) Indicates the tuning band.
- ⓔ **AUTO PROGRAM (automatic programming) button and lamp:** To preset the receivable stations automatically, press this button. The corresponding lamp blinks during automatic and manual programming.
- ⓕ **SEARCH + and − buttons:** Press to tune in a station. Press the − button to get a station of lower frequency and the + button to get a station of higher frequency.

⑭ Display window



- ⓐ **TIMER REC indication:** Shows the recorder is in the timer standby mode. It remains displayed until the timer recording is finished.
- ⓑ **Week indications:** Show the week in which the timer recording will take place.
- ⓒ **Day of the week indications**
- ⓓ **Time and counter display:** Usually shows the present time.
  When the CLOCK/COUNTER button is pressed to COUNTER, the display shows the counter number.
- ⓔ **Cassette-inside indication:** Shows a cassette is inserted.
- ⓕ **Turn-on and turn-off setting indications:** The "●" mark shows the display is the turn-on time of the timer recording and the "O" mark shows the turn-off time.
- ⓖ **Tape operation mode indications:** Show the engaged tape operation mode: ◀◀ (rewind), ▶ (playback), ▶▶ (fast-forward), ❚❚ (pause) or ● (recording).
- ⓗ **Programme number:** Shows the programme number selected with the PROGRAM/TIMER + and − buttons.
  When the INPUT SELECT button is pressed to LINE to record signals from the VIDEO IN and AUDIO IN jacks, the indication will change to "AU".

⑮ CLOCK/COUNTER button

Press to set the display to the tape counter. To reset to clock, press it again.

⑯ CLEAR/RESET button

Press to set the tape counter reading to "0000" when the tape counter is displayed. Also used for changing the timer setting and erasing the memory of the timer setting.

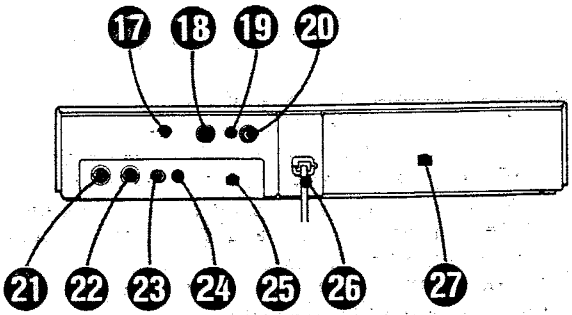


Illustration: SL-F30E E model

⑰ RF CHANNEL screw
If there is interference on the factory-preset channel for RF output and the signal of this recorder cannot be displayed clearly on the TV screen, adjust this screw with the supplied screwdriver.

⑱ AERIAL OUT socket
Connect the aerial input of the TV receiver using the supplied cable.

⑲ DX/LOCAL switch
Normally set this switch to DX. If the TV signal is very strong, set the switch to LOCAL.

⑳ AERIAL IN socket
Connect the aerial cable.

㉑ VIDEO OUT jack (BNC type)
Connect to the video input of another video cassette recorder or a video monitor.

㉒ VIDEO IN jack (BNC type)
Connect to the video output of a camera, another video cassette recorder, etc.

㉓ AUDIO OUT jack (phono type)
Connect to the audio input of a video monitor or video cassette recorder.

㉔ AUDIO IN jack (phono type)
Connect to the audio output of a camera or another video cassette recorder.

㉕ TEST SIGNAL switch
Set to ON to obtain the test pattern for adjusting the TV so that it can receive the signal from the recorder.

㉖ AC mains lead

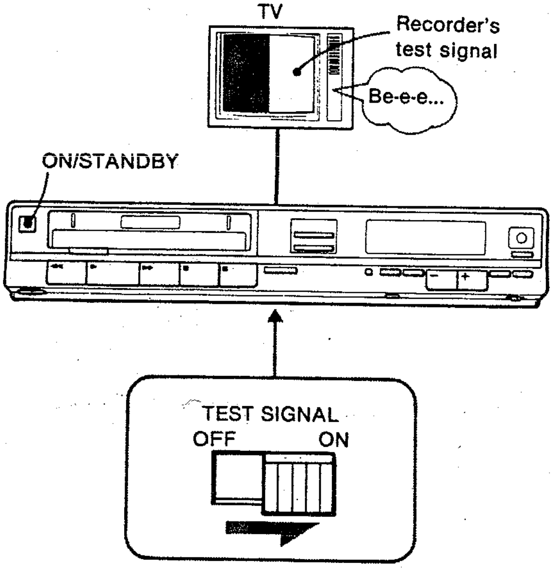
㉗ VOLTAGE SELECTOR (for the SL-F30E E model only)
Set to 110 — 127 V or 220 — 240 V according to your local power line voltage.

1-3. ADJUSTING THE TV

One of the television programme positions must be adjusted to receive the signal from the recorder.
Note that the adjustment is not necessary, however, when the recorder is connected to the video/audio inputs on the TV receiver/monitor.

1 After making the connections, press the ON/STANDBY button.
2 Make sure that the recorder is in the stop mode.
3 Set the TEST SIGNAL switch located at the rear of the recorder to ON. The test signal is transmitted on a channel between UHF channels E30 and E39.
4 Turn on the TV and select a programme position which is not being used to receive a TV station. Tune the channel until you see a clear black and white pattern on the TV screen and you hear a continuous tone. This is the recorder's test signal.

—If you are not sure how to adjust your TV, please refer to the TV's instruction manual or consult your dealer.

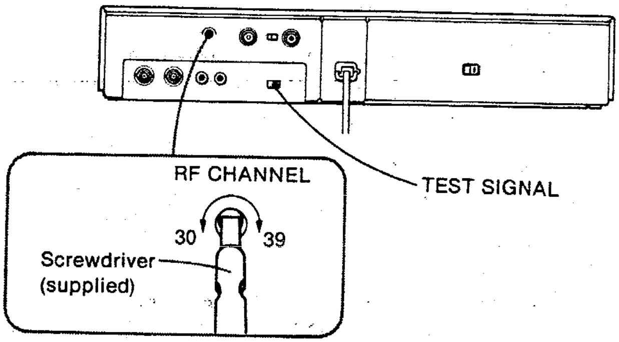


Whenever you use the video recorder, you should set the TV to the programme position selected in this adjustment.

If the test picture is free of disturbance, the TV adjustment is complete. Set the TEST SIGNAL switch to OFF.

If the test picture is not free of disturbance

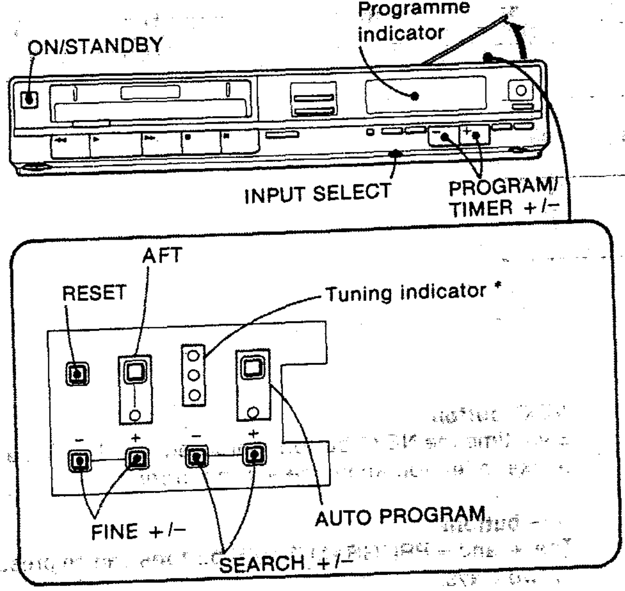
1 Reset the TEST SIGNAL switch to OFF.
2 Adjust the channel of the TV to a channel between UHF channels E30 and E39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound is heard.
3 Set the TEST SIGNAL switch to ON again.
4 Slowly turn the RF CHANNEL screw on the back of the recorder with the supplied screwdriver, until you see an undistorted test pattern on the TV screen.
5 Now the TV adjustment is complete. Reset the TEST SIGNAL switch to OFF.



1-4. TV STATION PROGRAMMING

Automatic and manual programming are available. Automatic programming automatically presets receivable stations from the lowest frequency to the highest. Manual programming is useful for presetting selected stations in any desired sequence.

To start programming, turn on the recorder by pressing the ON/STANDBY button and set the INPUT SELECT button to TUNER.



AUTOMATIC PROGRAMMING

Press the AUTO PROGRAM button. Up to 30 receivable stations (for the SL-F30EC) or upt to 12 stations (for the SL-F30E and the SL-F30UB) will be preset one by one from programme position 1. When no more stations can be located, programme number "1" will light on the programme indicator and automatic programming will stop.

MANUAL PROGRAMMING

1 Press the + or – PROGRAM/TIMER button to select the programme position.
   + for a higher-numbered programme position
   – for a lower-numbered programme position

2 Press the + SEARCH button to locate a station with higher frequency and the – SEARCH button to locate a station with lower frequency.
   When a station has been received, the search will stop. Press the + or – SEARCH button again, until the desired station is received.

Repeat these steps for all desired stations.

FINE TUNING OF A WEAK STATION

If the picture on a particular programme position is not acceptable, keep the + or – FINE button pressed until the picture becomes clearer. When either of the FINE buttons is pressed, the AFT of the selected station is deactivated and the AFT lamp goes off. To view this particular station, keep the AFT deactivated. (Do not press the AFT button.)
When other memorized stations are selected, the AFT automatically activates.

ELIMINATING NOISE ON UNUSED PROGRAMME POSITIONS

Simply press the RESET button. The annoying noise will be eliminated.

***Tuning indicator (for the SL-F30E and the SL-F30EC)**
The tuning indicator lights to show the current tuning band.
V_L: E2 - E4 and Cable TV S1 - S3 channels
V_H: E5 - E12 and Cable TV M1 - M10 and U11 - U20 channels.
U: E21 - E68 channels

Note: Cable TV channels are receivable on the SL-F30EC only.

1-5. CLOCK SETTING

When you connect the mains lead to a mains outlet, the clock indicates "0 : 00" with the two dots blinking.

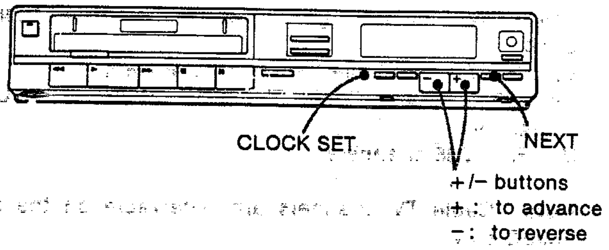
Example: To set the clock to 7 : 35 p.m. (19 : 35) on Tuesday *

***Time indication**

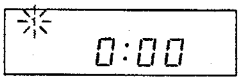
AM				PM					
12 : 00 (midnight)	1 : 00		11 : 00	12 : 00 (noon)	1 : 00	2 : 00		10 : 00	11 : 00
↓	↓		↓	↓	↓	↓		↓	↓
0:00	1:00		11:00	12:00	13:00	14:00		22:00	23:00

Day indication

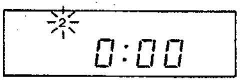
Mo (Monday)	Tu (Tuesday)	We (Wednesday)	Th (Thursday)	Fr (Friday)	Sa (Saturday)	Su (Sunday)
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7



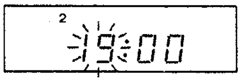
1 Press CLOCK SET.



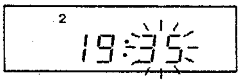
2 Set the day by pressing + or –.



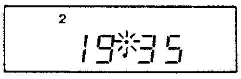
3 Press NEXT and set the hour by pressing + or – .



4 Press NEXT and set the minute by pressing + or – .



5 With an announced time signal, press NEXT.
The clock now starts operating, showing the correct time.



The dots of the colon alternately blink every 30 seconds.

NEXT button
Each time the NEXT button is pressed, the item to be set blinks to let you know the setting order.

+/– buttons
The + and – PROGRAM/TIMER buttons can be pressed in two ways.

When you hold a button down, the digits will advance continuously until the button is released.

When you press and immediately release a button, the digits will advance by one.

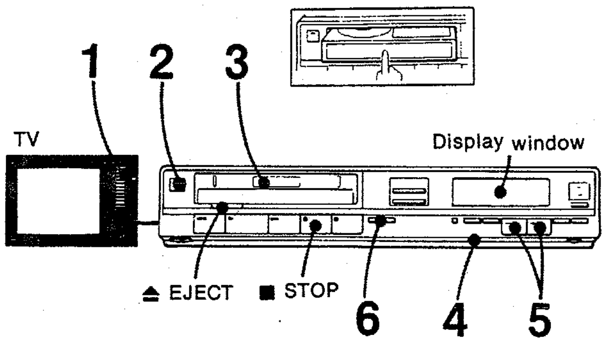
To change the actual clock setting
Press the CLOCK SET button and repeat the clock setting procedure from step 1.

Note
If you have pressed the CLOCK SET button inadvertently, press the NEXT button enough times until the dots of the colon blink.

When power has been interrupted, the time indication reverts to "0 : 00", showing that the clock must be reset.

1-6. TV PROGRAMME RECORDING

Numbers in the illustration show the sequence of operation.



1 Turn on the TV and select the programme position for the recorder.
2 Press the ON/STANDBY button. The indicator on the button will light up.
3 Insert the cassette with the round window to the left. The ▣ indication will appear on the display window.
  ●Do not use force when inserting the cassette into the compartment.
4 Press the INPUT SELECT button (TUNER) so that a programme number appears on the display window.
5 Select the programme to be recorded with the +/− PROGRAM/TIMER buttons.
  + for higher numbered programmes, and − for lower numbered programmes.
6 Press the ● RECORD button. The ● indication will appear on the display window and recording will begin.
  ● If the inserted cassette does not have the safety tab, or if the tape is at its end, the cassette will be automatically ejected.

To stop recording, press the ■STOP button.

To eject the cassette, press the ≜ EJECT button after stopping the recording.

To view another TV programme while recording, simply select the programme you want to view with the TV's programme selector.

When the tape reaches the end during recording, it will be automatically rewound.

Note
The recorder can be automatically turned on by inserting a cassette without pressing the ON/STANDBY button.

CAUTION

Television programmes, films, video tapes and other materials may be copyrighted.
Unauthorized recording of such material may be contrary to the provision of the copyright laws.

TO STOP RECORDING MOMENTARILY

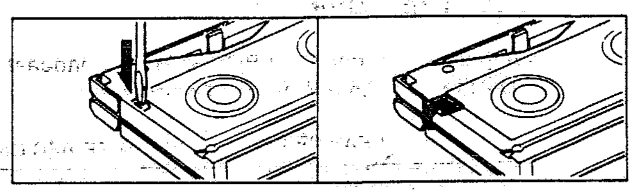
Press the ❚❚ button. The ❚❚ indicator will appear on the display window. The TV programme can be seen on the TV, but the picture will not be recorded.
To resume recording, press the ❚❚ button again.
To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and recording will stop.

TO KEEP A RECORDED PROGRAMME FROM BEING ACCIDENTALLY ERASED

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased.

To avoid erasing a recording
Break off the safety tab using a screwdriver or similar object.

To re-record on a cassette which has had the safety tab removed
Cover the slot with a piece of plastic tape.

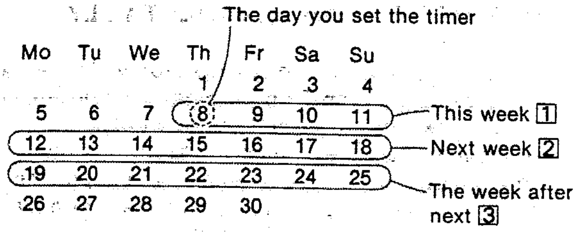


If you activate the ● RECORD button or the TIMER REC ON/OFF button with a cassette with its safety tab removed inserted, the cassette will be automatically ejected.

1-7. TIMER-ACTIVATED RECORDING

Using the built-in timer, you can make one recording any day or every day, either this week, next week or the week after next.

Possible days for recording


The day you set the timer
Mo Tu We Th Fr Sa Su
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
This week 1
Next week 2
The week after next 3

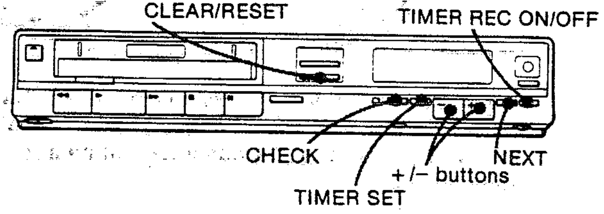
Check before setting the timer

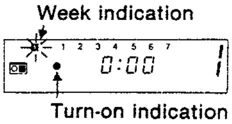
- Is the clock set to the correct day and correct time? Timer setting can only be made after the clock has been set.
- Is a cassette inserted in the recorder?
- Is the cassette long enough to record the programmes?
- Does the cassette have a safety tab on the bottom?

Note: The timer cannot be set during recording or playback.

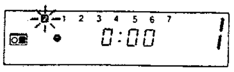
TO SET THE TIMER

Example: To record a PROGRAM 2 broadcast from 9:00 AM to 11:25 AM on Friday next week.

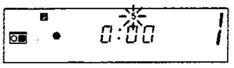

CLEAR/RESET
TIMER REC ON/OFF
CHECK
NEXT
+/– buttons
TIMER SET



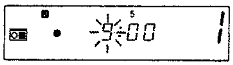
1. Press TIMER SET.
   (If the recorder is off, it will be turned on automatically.)



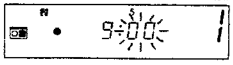
2. Set the week by pressing + or –.
   Week indication changes:
   1→2→3



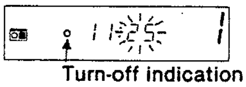
3. Press NEXT and set the turn-on day by pressing + or –.
   Day indication changes:
   1234567(everyday)→1→2→...7



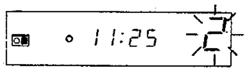
4. Press NEXT and set the turn-on hour by pressing + or –.



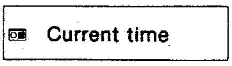
5. Press NEXT and set the minute by pressing + or –.
   (To set to 00 minutes, there is no need to press + or –.)



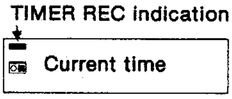
6. Press NEXT and set the turn-off hour and minute with + or – as in turn-on time setting.



7. Press NEXT and select the programme to be recorded with + or –.
   To record the signals from the equipment connected to the VIDEO IN jacks, press INPUT SELECT so that "AU" indication appears.



8. Press NEXT.
   The display reverts to the current time.



9. Press TIMER REC ON/OFF.
   The TIMER REC indication appears and the recorder is turned off.

At the preset turn-on time, recording will start automatically and will stop at the preset turn-off time.

Note
If the inserted cassette is at its end or does not have the safety tab, the cassette will be automatically ejected when the TIMER REC ON/OFF button is pressed.

ONCE THE TIMER REC INDICATION HAS DISPLAYED, NO FUNCTION OF THE RECORDER CAN BE ACTIVATED, except for checking the timer setting.
To operate the recorder after setting the timer for recording, press the TIMER REC ON/OFF buton so that the TIMER REC indication goes off. To reactivate the timer recording standby mode, be sure to press the TIMER REC ON/OFF button again.

WHILE SETTING TIMER

To change the preset item
Press the CLEAR/RESET button and repeat the timer setting procedure from step 2.

To record to the end of the tape
Set the turn-off time to a time after the tape will reach its end.

BEFORE OR DURING TIMER RECORDING

To check the timer settings
Press the CHECK button. Each time the CHECK button is pressed, the display will change to the preset turn-on time, the turn-off time, then the current time.
During actual timer recording, only the turn-off time can be checked.

To change the settings
1. Press the TIMER REC ON/OFF button so that the TIMER REC indication goes off.
2. Press the CHECK button.
3. Press the CLEAR/RESET button.
4. Repeat the timer setting procedure from step 2.

To erase the timer setting
1. Press the TIMER REC ON/OFF button so that the TIMER REC indication goes off.
2. Press the CHECK button.
3. Press the CLEAR/RESET button.
4. Press the TIMER SET button. The setting will be erased from the memory.

Note: When the TIMER REC indication is displayed, the timer setting cannot be erased.

If the tape reaches the end during timer recording
The recording will stop and the tape will be rewound to the beginning. Then after about a second, the recorder will be turned off.

To stop the on-going timer recording
Press the TIMER REC ON/OFF button so that the TIMER REC indication goes off. The unit will be turned off automatically after about a second.

When a power interruption occurs
If the clock shows "0:00" and the dots blink, all the timer settings have been erased. Reset the clock time and the timer settings.

AFTER TIMER RECORDING

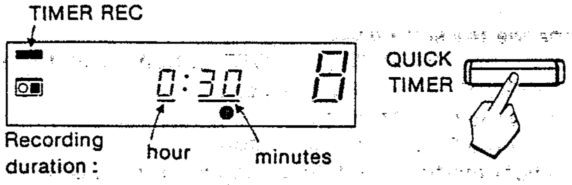
When a timer recording is finished, the programming (except the everyday setting) will be deleted automatically.

1-8. QUICK TIMER RECORDING

—To set the recording duration and to turn off the unit automatically

During recording, you can set the recording duration for up to 4 hours in units of 30 minutes by pressing the QUICK TIMER button. After the preset time has elapsed, recording stops and the recorder is turned off automatically.

1 Start recording.
2 Press the QUICK TIMER button to set the recording duration.
The TIMER REC indication will appear.



Each time you press the QUICK TIMER button, the indication changes : 0 : 30 → 1 : 00 → 1 : 30 → 2 : 00 → ... 3 : 30 → 4 : 00

As the recording continues, the duration indication decreases minute by minute to 0:00 and the recording stops. The recorder is turned off automatically.

Note
When the TIMER REC indication is displayed, no function of the recorder can be activated.

To extend the recording duration
The on-going recording duration can be extended simply by pressing the QUICK TIMER button.
The duration will be extended in units of 30 minutes with each pressing.
Example : When 2:25 is indicated,
2:25 → 2:30 → 3:00 ...

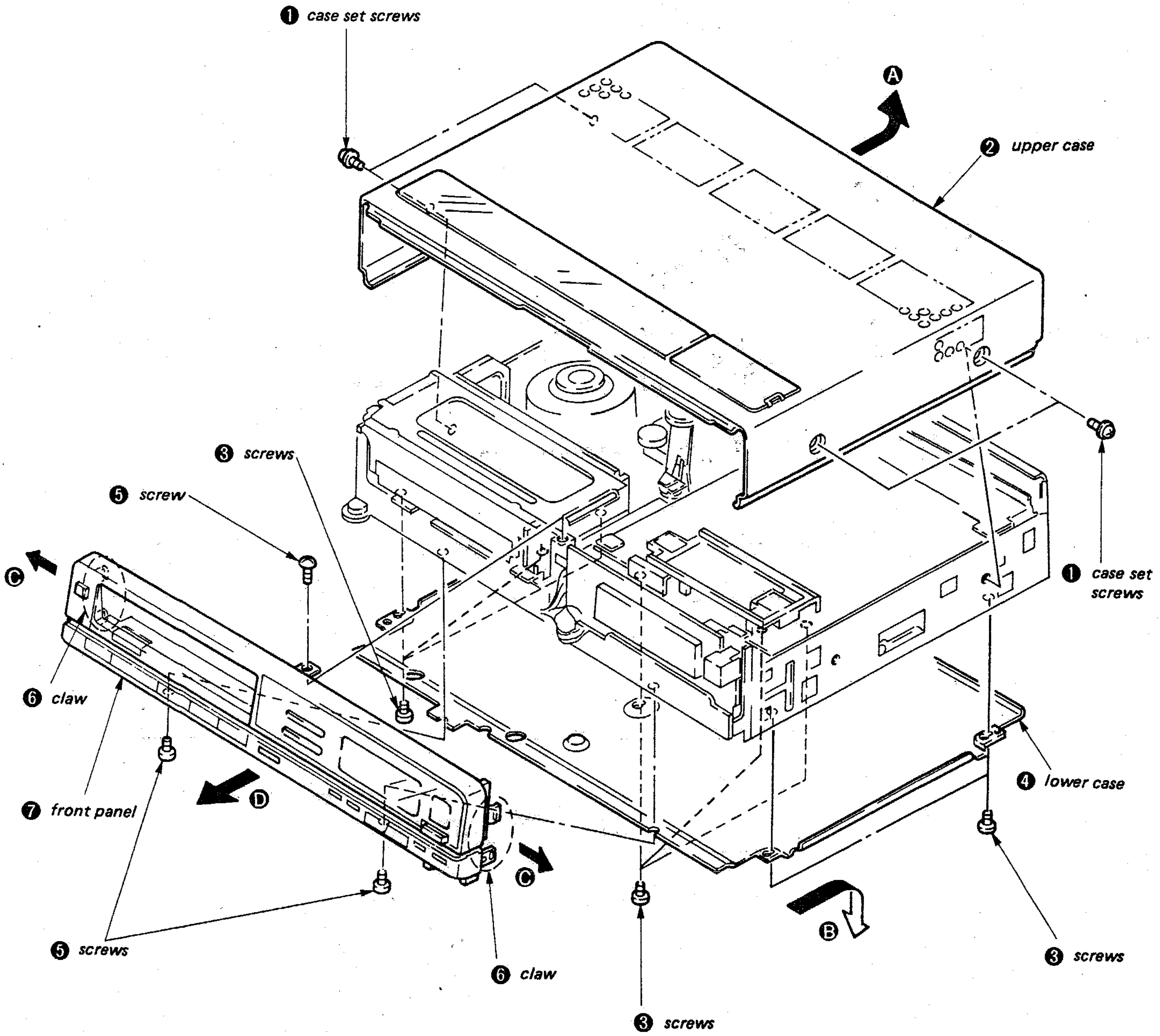
To cancel the quick timer function
Press the TIMER REC ON/OFF button so that the TIMER REC indication goes off. The recorder will be turned off automatically after about a second.

SECTION 2
DISASSEMBLY

2-1. DISASSEMBLY OF CABINET

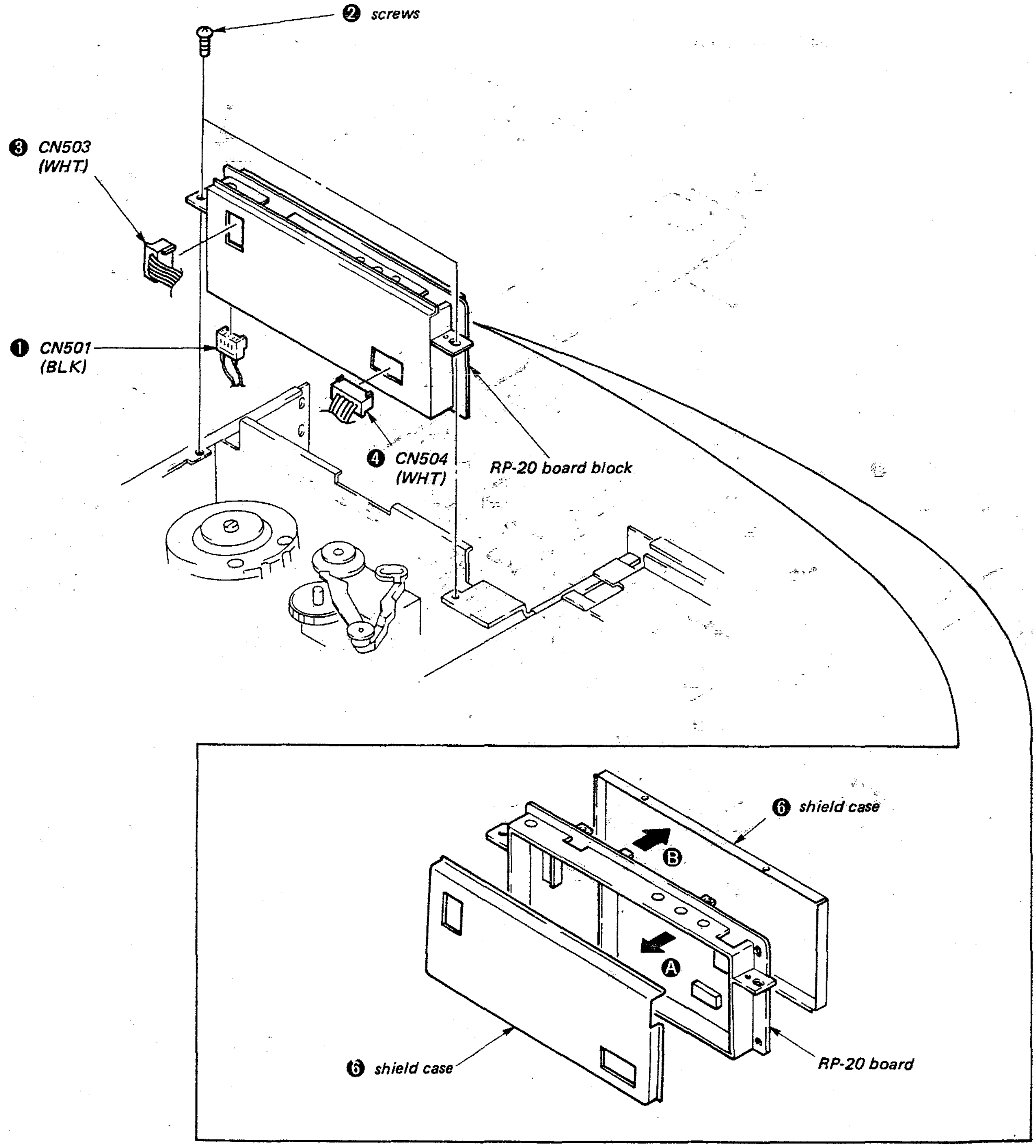
1) Remove the four case set screws ❶ .
2) Remove the upper case ❷ in the direction shown by the arrow Ⓐ .
3) Loosen the eight screws (BVTP3 x 8) ❸ .
4) Remove the lower case ❹ in the direction shown by the arrow Ⓑ .
5) Remove the three screws (BVTP3 x 8) ❺ .
6) Remove the two claws ❻ in the direction shown by the arrow Ⓒ , then remove the front panel ❼ in the direction shown by the arrow Ⓓ .

Note: Follow the disassembly procedure in the numerical order given.


❶ case set screws
Ⓐ
❷ upper case
❸ screws
❺ screw
Ⓒ
❶ case set screws
❻ claw
❹ lower case
❼ front panel
Ⓓ
Ⓒ
Ⓑ
❺ screws
❻ claw
❸ screws
❸ screws

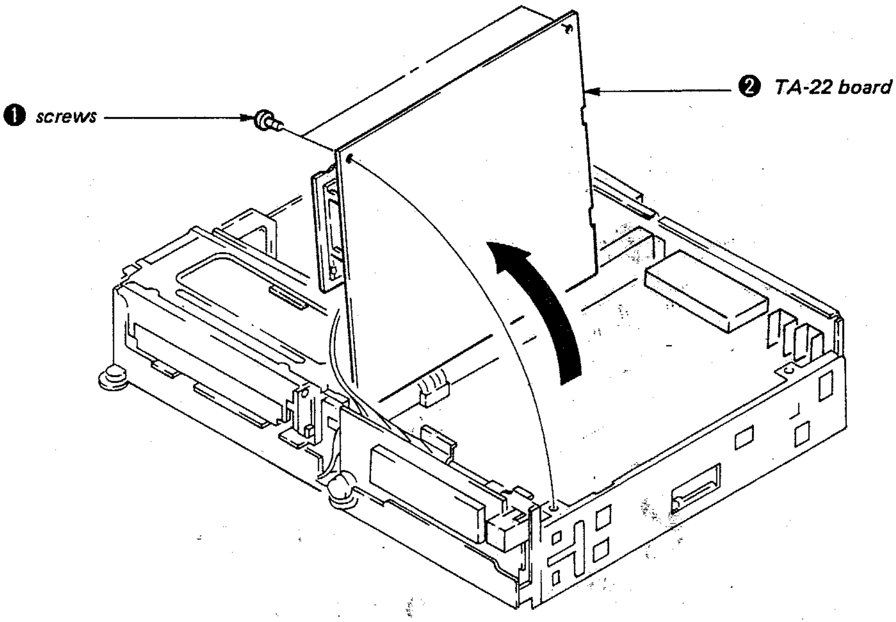
2-2. REMOVAL OF THE RP-20 BOARD

1) Pull out the connector CN501 ❶ .
2) Remove the two screws (BVTP3 x 8) ❷ .
3) Pull out the three connectors (CN503, CN504) ❸ , ❹ .
4) Remove the two shield cases ❻ in the direction shown by the arrows Ⓐ and Ⓑ .


❷ screws
❸ CN503 (WHT)
❶ CN501 (BLK)
❹ CN504 (WHT)
RP-20 board block
❻ shield case
Ⓑ
Ⓐ
❻ shield case
RP-20 board

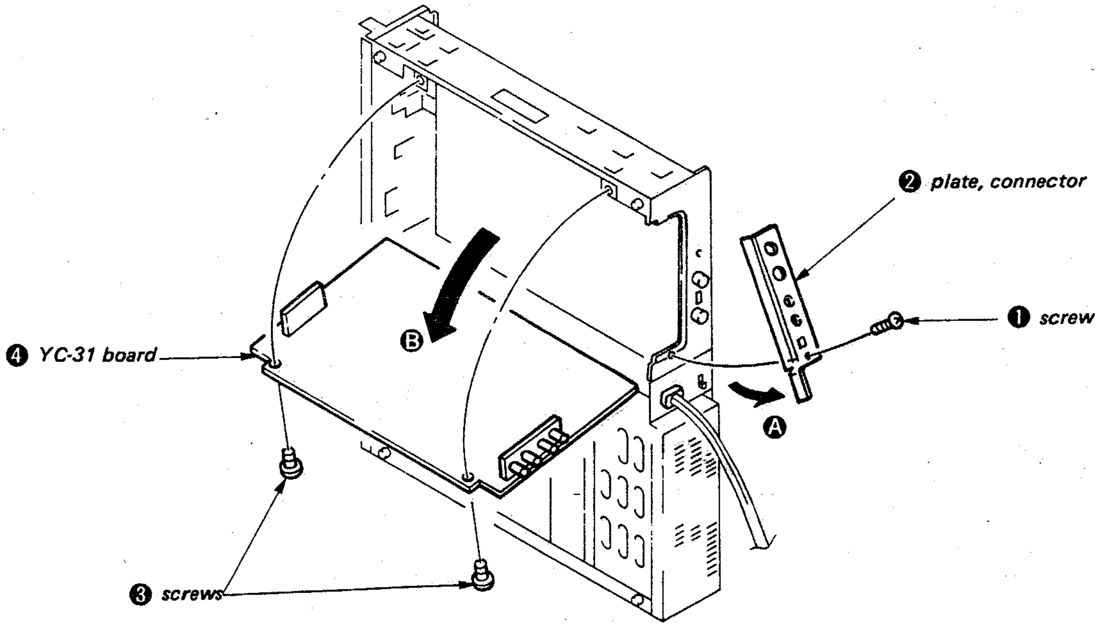
2-3. REMOVAL OF THE TA-22 BOARD

1) Remove the two screws (BVTP3 x 8) ❶ .
2) Remove the TA-22 board ❷ in the direction shown by the arrow.


❶ screws
❷ TA-22 board

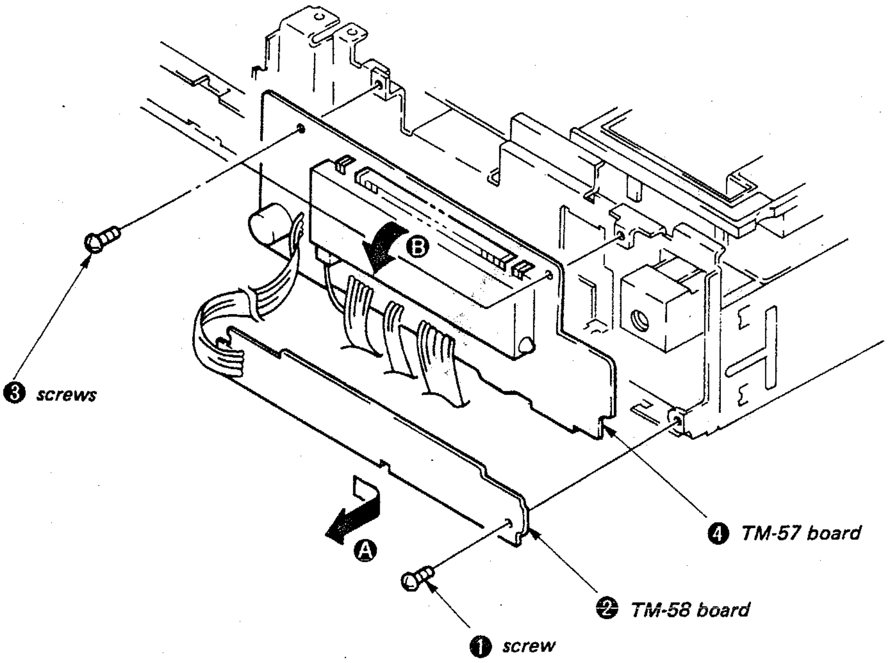
2-4. REMOVAL OF THE YC-31 BOARD

1) Stand the set with the left side panel on the bottom.
2) Remove the screw (BVTP3 x 8) ❶ .
3) Remove the plate, connector ❷ in the direction shown by the arrow Ⓐ .
4) Remove the two screws (BVTP3 x 8) ❸ .
5) Remove the YC-31 board ❹ in the direction shown by the arrow Ⓑ .


❷ plate, connector
❶ screw
❹ YC-31 board
Ⓑ
Ⓐ
❸ screws

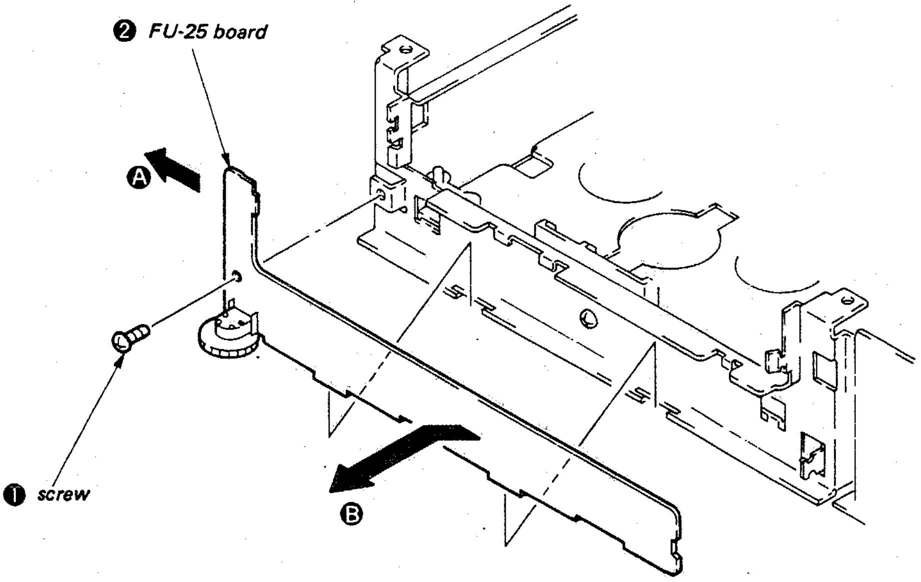
2-5. REMOVAL OF THE TIMER BLOCK

1) Remove the screw (BVTP3 x 8) ❶ .
2) Remove the TM-58 board ❷ in the direction shown by the arrow Ⓐ .
3) Remove the two screws (BVTP3 x 8) ❸ .
4) Remove the TM-57 board ❹ in the direction shown by the arrow Ⓑ .


Ⓑ
❸ screws
❹ TM-57 board
Ⓐ
❷ TM-58 board
❶ screw

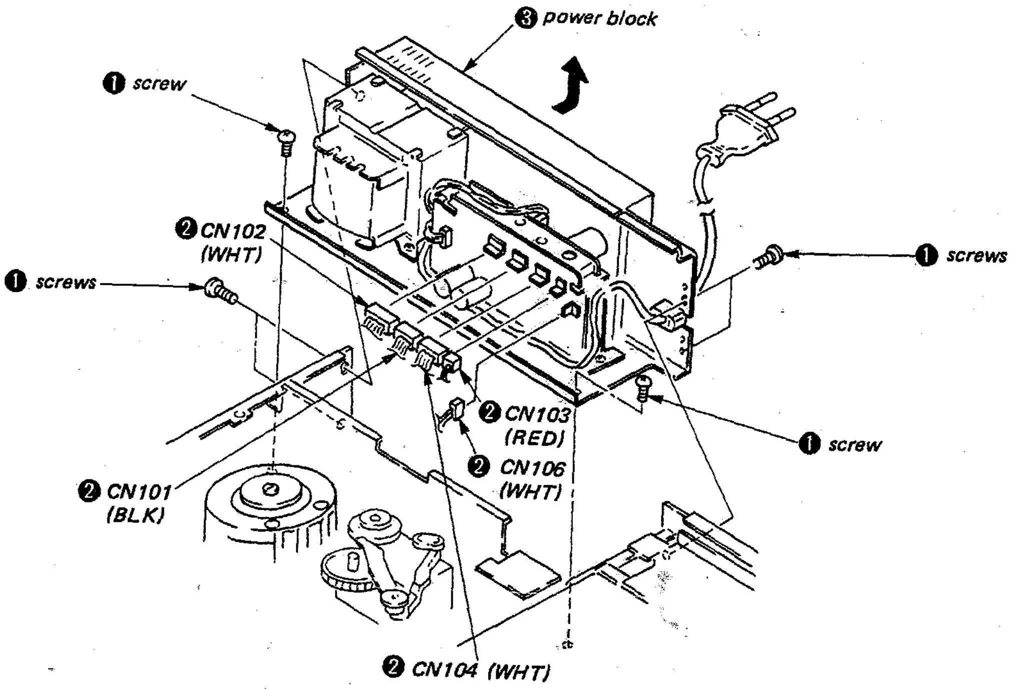
2-6. REMOVAL OF THE FU-25 BOARD

1) Remove the screw (BVTP3 x 8) ❶ .
2) Remove the FU-25 board ❷ in the direction shown by the arrow Ⓐ , then remove in the direction shown by the arrow Ⓑ .


❷ FU-25 board
Ⓐ
❶ screw
Ⓑ

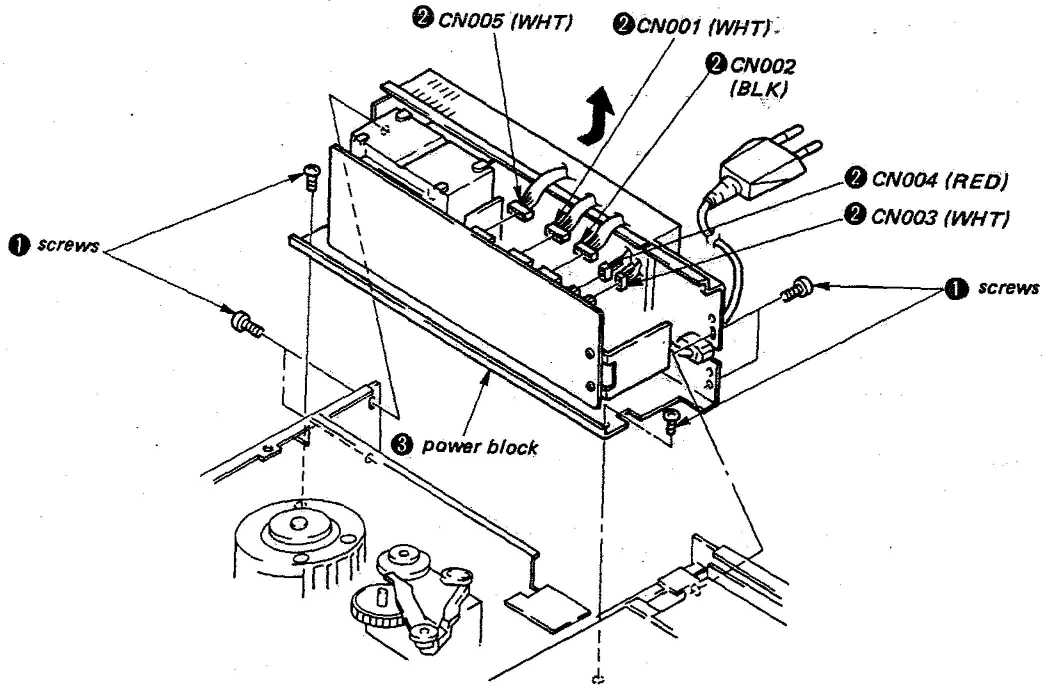
2-7-1. REMOVAL OF THE POWER BLOCK (AEP, UK, EC MODEL)

1) Remove the six screws (BVTP3 x 8) ❶.
2) Pull out the five connectors (CN101, CN102, CN103, CN104, CN106) ❷.
3) Remove the power block ❸ in the direction shown by the arrow.


❸ power block
❶ screw
❷CN102 (WHT)
❶ screws
❶ screws
❶ screw
❷CN103 (RED)
❷ CN106 (WHT)
❷ CN101 (BLK)
❷ CN104 (WHT)

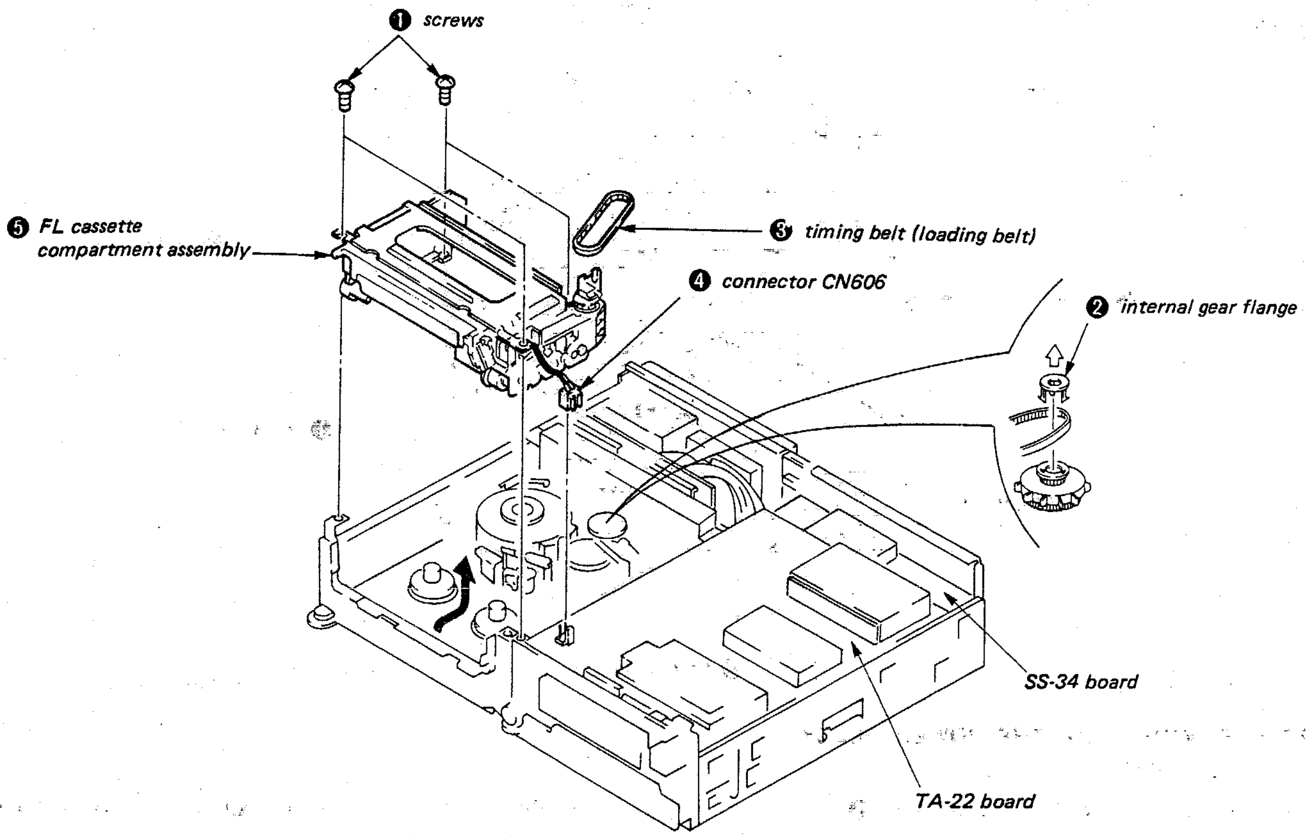
2-7-2. REMOVAL OF THE POWER BLOCK (E MODEL)

1) Remove the six screws (BVTP3 x 8) ❶.
2) Pull out the five connectors (CN001, CN002, CN003, CN004, CN005) ❷.
3) Remove the power block ❸ in the direction shown by the arrow.


❷CN005 (WHT)
❷CN001 (WHT)
❷CN002 (BLK)
❷CN004 (RED)
❷CN003 (WHT)
❶ screws
❶ screws
❸ power block

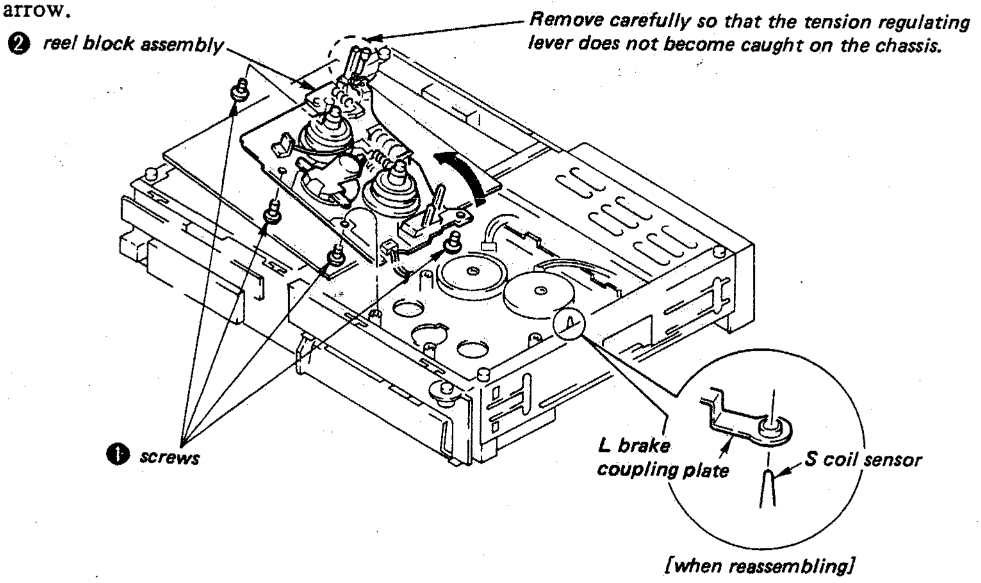
2-8. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

1) Remove the four screws (BVTP3 x 8) ❶ .
2) Remove the internal gear flange ❷ .
3) Remove the timing belt (loading belt) ❸ .
4) Pull out the connector CN606 ❹ , on the SS-34 board.
5) Remove the FL cassette compartment assembly in the direction shown by the arrow.


❶ screws
❺ FL cassette compartment assembly
❸ timing belt (loading belt)
❹ connector CN606
❷ internal gear flange
SS-34 board
TA-22 board

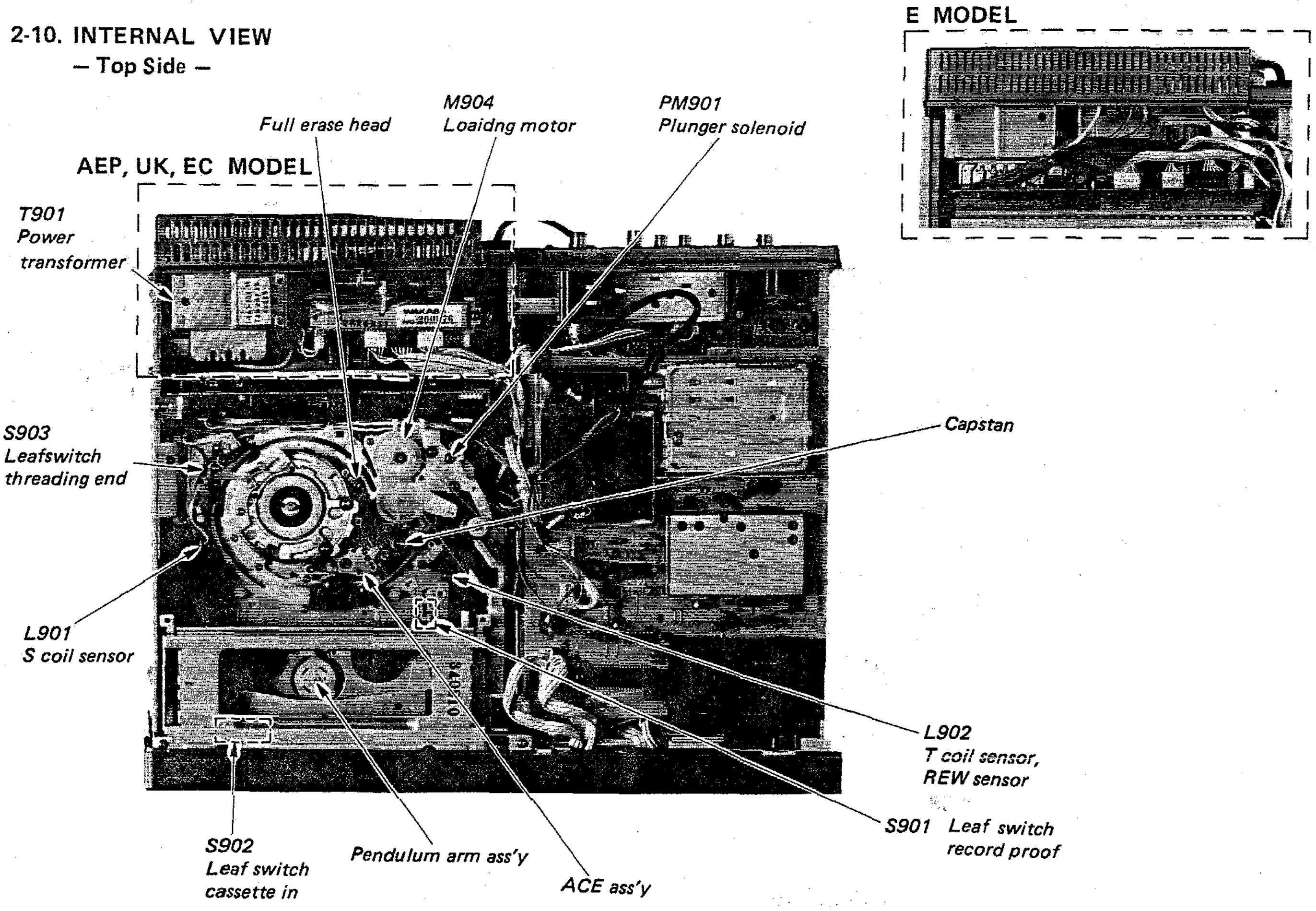
2-9. REMOVAL OF THE REEL BLOCK ASSEMBLY

1) Remove the four screws (BVTP3 x 8) ❶ .
2) Remove the reel block assembly ❷ in the direction shown by the arrow.

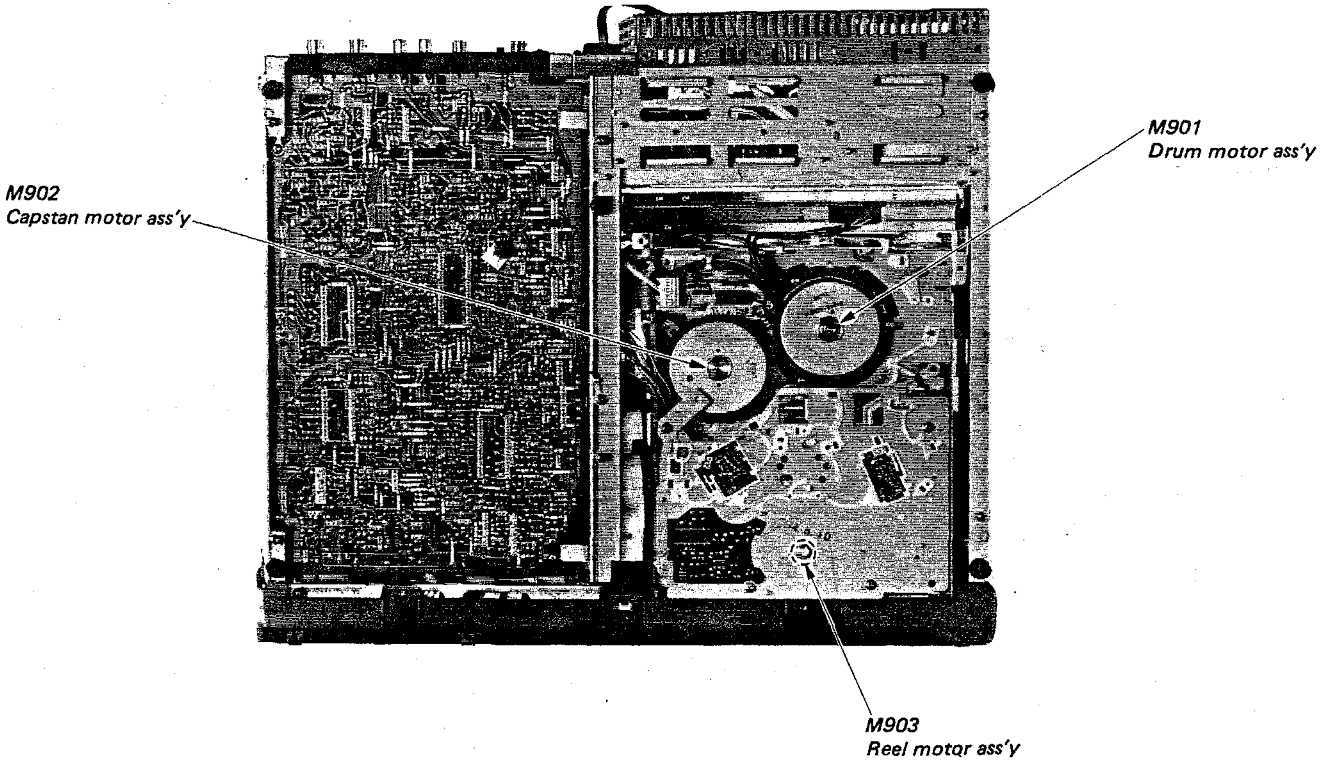

❷ reel block assembly
Remove carefully so that the tension regulating lever does not become caught on the chassis.
❶ screws
L brake coupling plate
S coil sensor
[when reassembling]

2-10. INTERNAL VIEW

— Top Side —

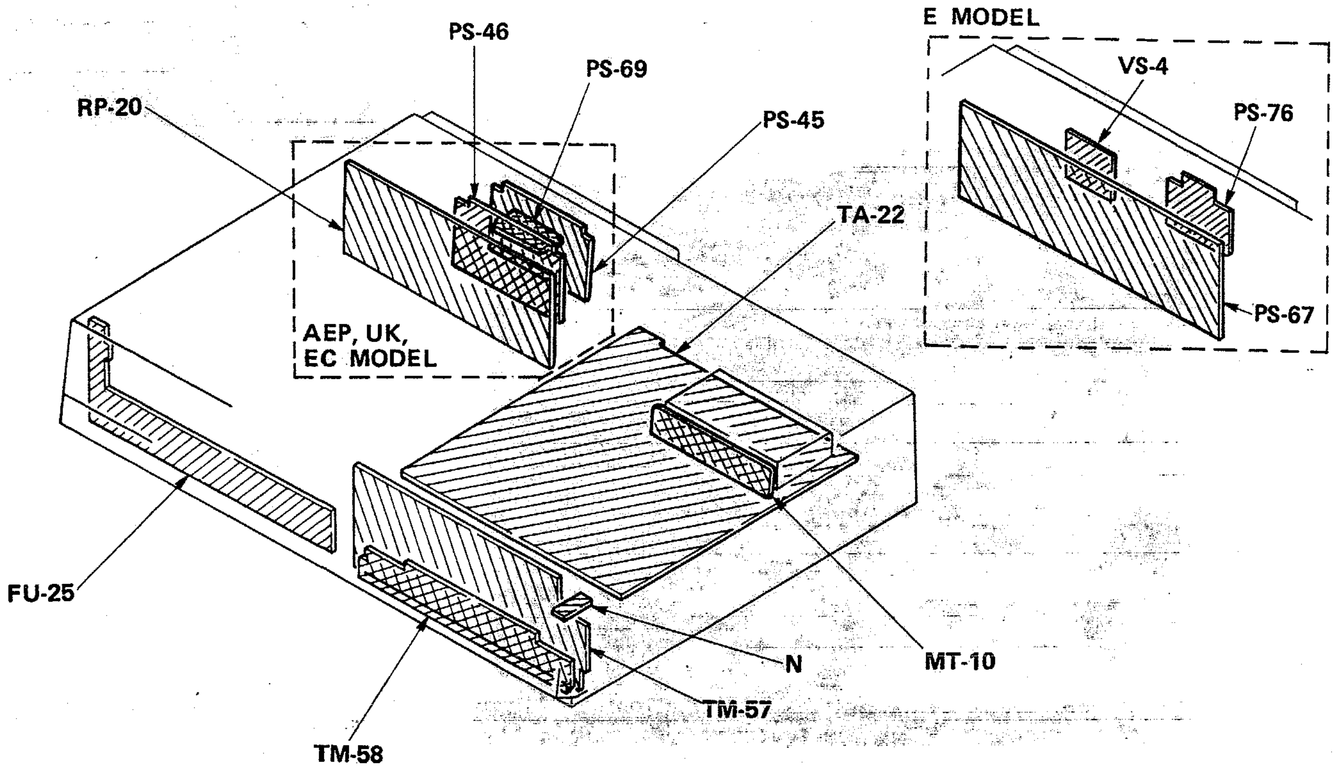

E MODEL
AEP, UK, EC MODEL
Full erase head
M904
Loaidng motor
PM901
Plunger solenoid
T901
Power
transformer
S903
Leafswitch
threading end
Capstan
L901
S coil sensor
L902
T coil sensor,
REW sensor
S901 Leaf switch
record proof
S902
Leaf switch
cassette in
Pendulum arm ass'y
ACE ass'y

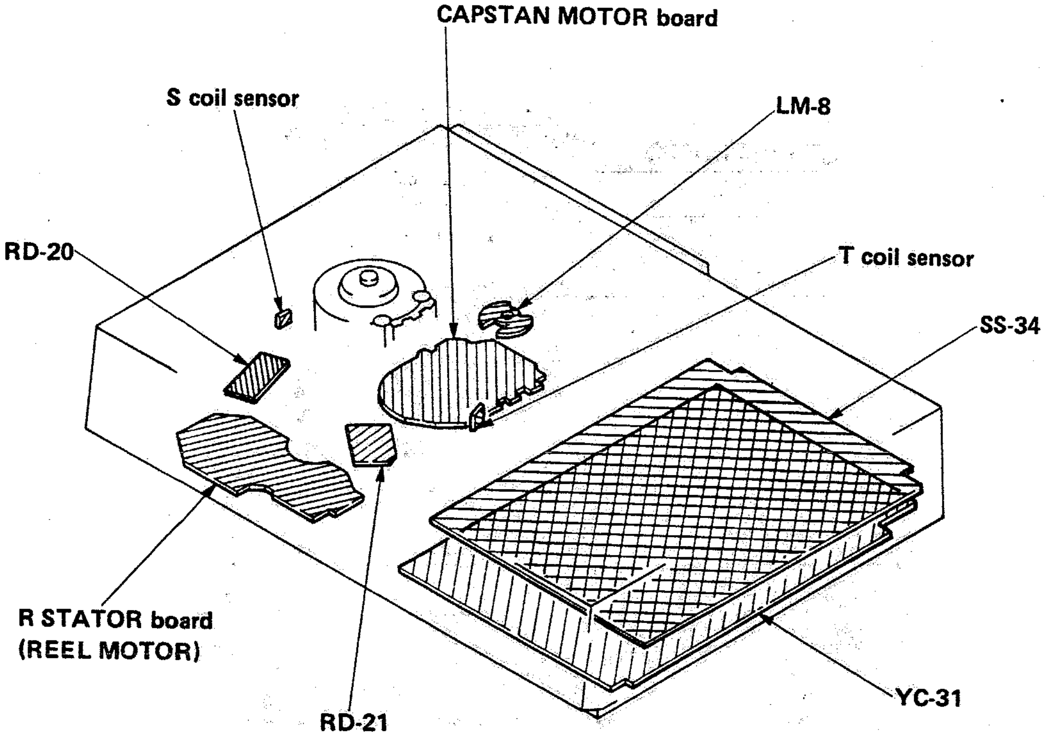
— Bottom Side —


M901
Drum motor ass'y
M902
Capstan motor ass'y
M903
Reel motor ass'y

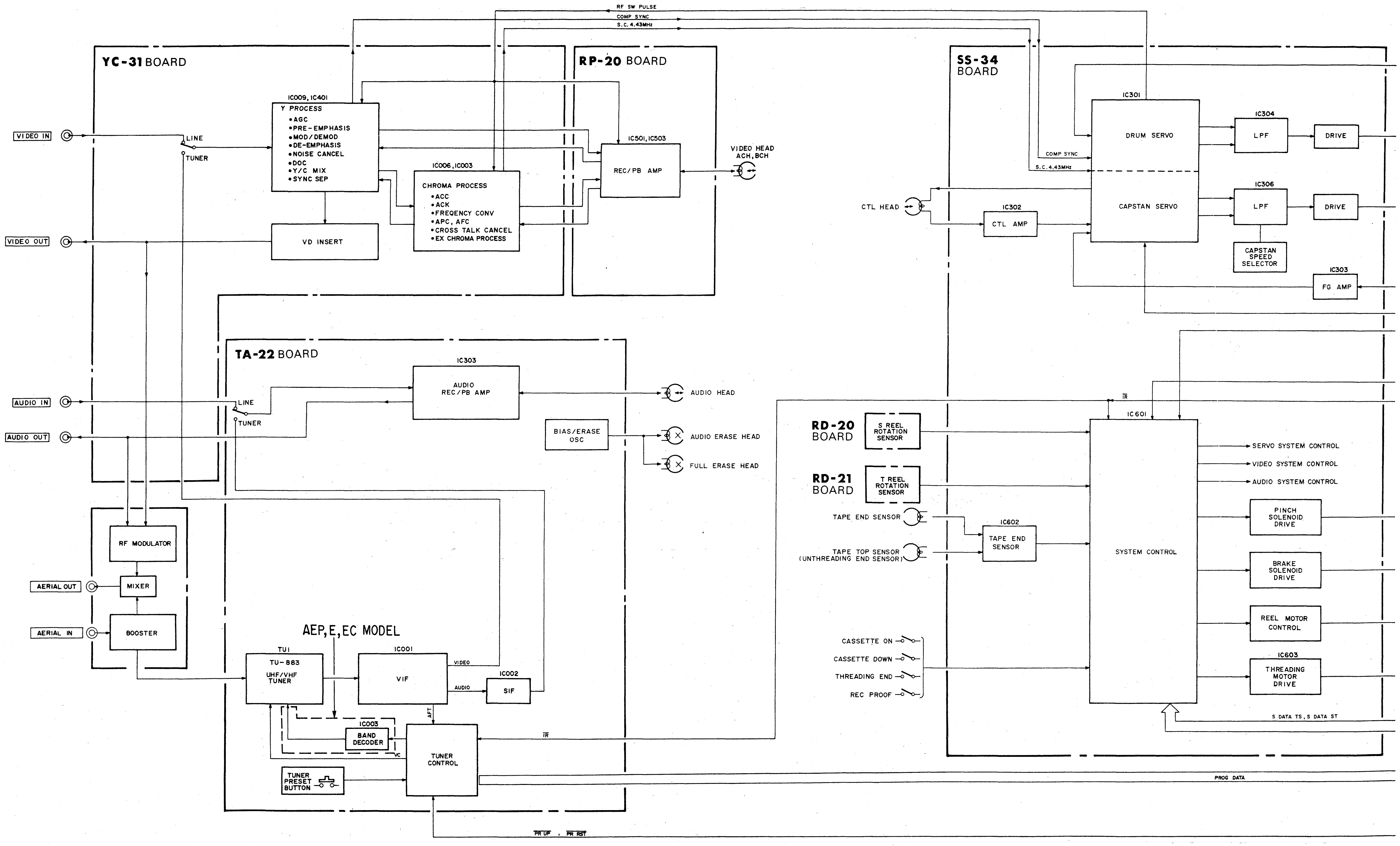
SECTION 3
DIAGRAMS

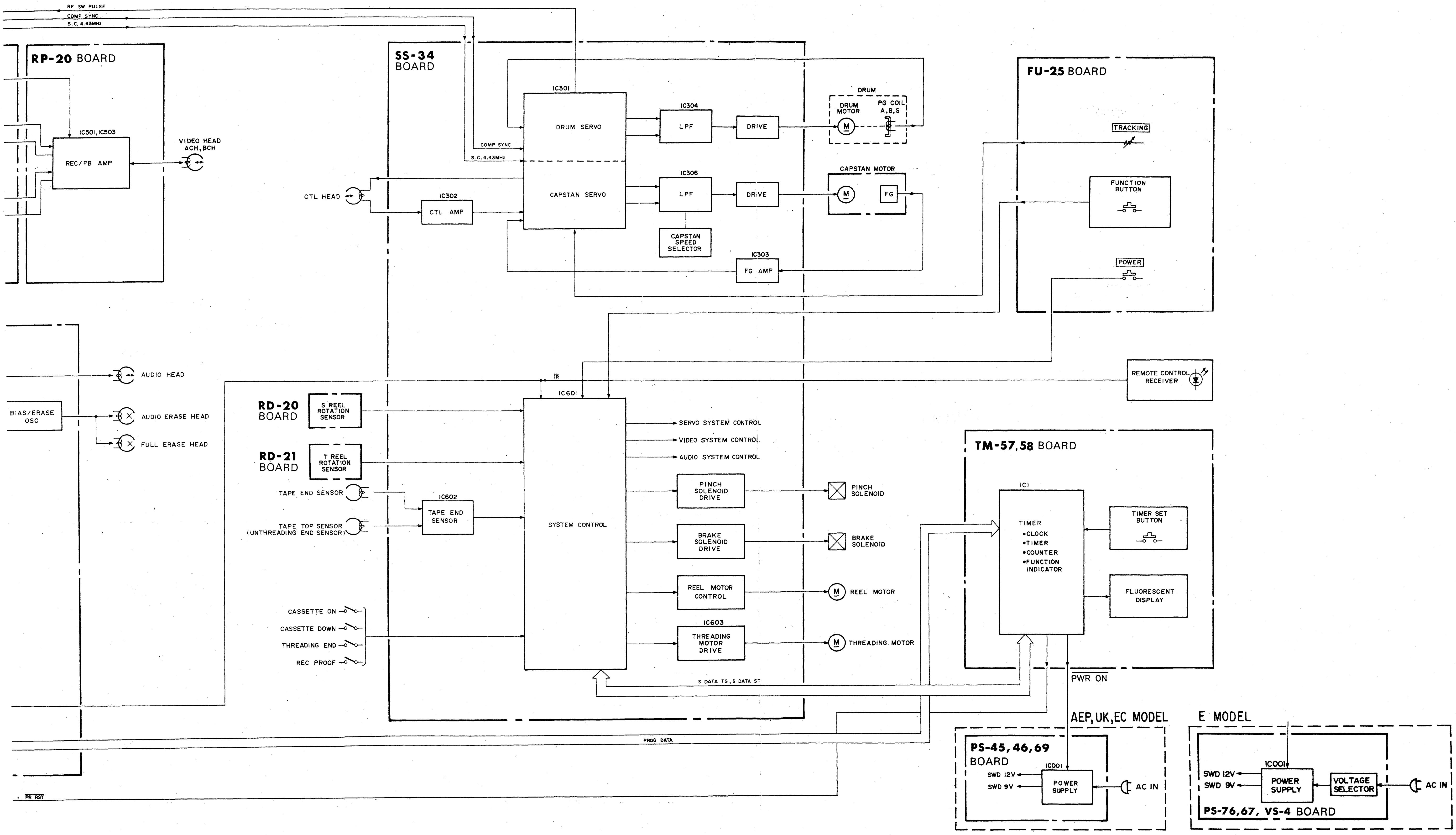
3-1. CIRCUIT BOARDS LOCATION


PS-46
PS-69
RP-20
PS-45
E MODEL
VS-4
PS-76
TA-22
PS-67
AEP, UK, EC MODEL
FU-25
N
MT-10
TM-57
TM-58

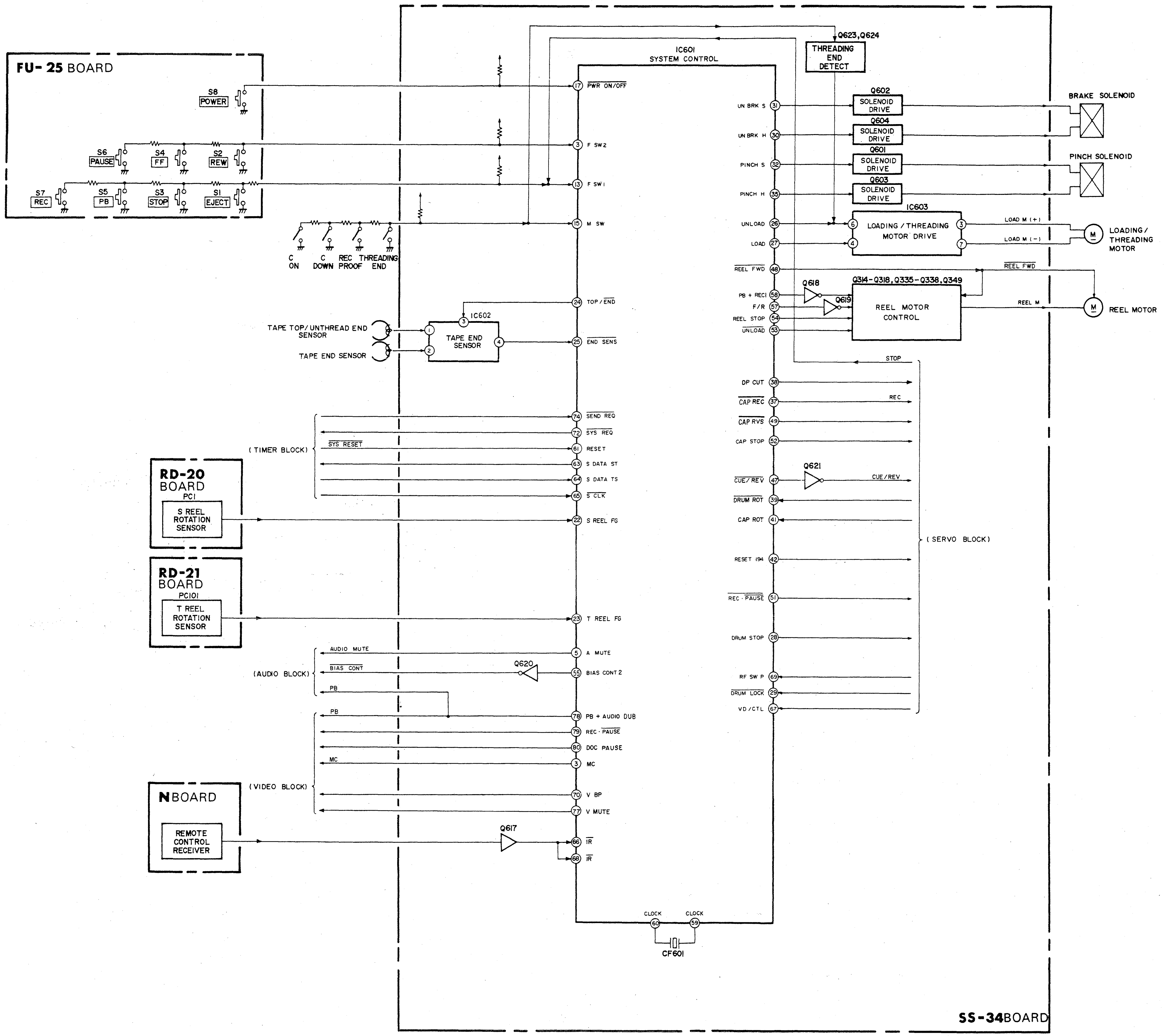

CAPSTAN MOTOR board
S coil sensor
LM-8
RD-20
T coil sensor
SS-34
R STATOR board (REEL MOTOR)
RD-21
YC-31

3-2. OVERALL BLOCK DIAGRAM


RF SW PULSE
COMP SYNC
S.C. 4.43MHz
YC-31 BOARD
VIDEO IN
LINE
TUNER
IC009, IC401
Y PROCESS
•AGC
•PRE-EMPHASIS
•MOD/DEMOD
•DE-EMPHASIS
•NOISE CANCEL
•DOC
•Y/C MIX
•SYNC SEP
IC006, IC003
CHROMA PROCESS
•ACC
•ACK
•FREQENCY CONV
•APC, AFC
•CROSS TALK CANCEL
•EX CHROMA PROCESS
VD INSERT
VIDEO OUT
RP-20 BOARD
IC501, IC503
REC/PB AMP
VIDEO HEAD
ACH, BCH
TA-22 BOARD
IC303
AUDIO
REC/PB AMP
AUDIO HEAD
AUDIO IN
LINE
TUNER
AUDIO OUT
BIAS/ERASE
OSC
AUDIO ERASE HEAD
FULL ERASE HEAD
RF MODULATOR
MIXER
AERIAL OUT
BOOSTER
AERIAL IN
AEP, E, EC MODEL
TU1
TU-883
UHF/VHF
TUNER
IC001
VIF
VIDEO
AUDIO
IC002
SIF
AFT
IC003
BAND
DECODER
VC
TUNER
CONTROL
TUNER
PRESET
BUTTON
IR
PR UP , PR RST
PROG DATA
SS-34
BOARD
IC301
DRUM SERVO
CAPSTAN SERVO
COMP SYNC
S.C. 4.43MHz
IC304
LPF
DRIVE
IC306
LPF
DRIVE
CAPSTAN
SPEED
SELECTOR
IC303
FG AMP
CTL HEAD
IC302
CTL AMP
IR
IC601
SYSTEM CONTROL
RD-20
BOARD
S REEL
ROTATION
SENSOR
RD-21
BOARD
T REEL
ROTATION
SENSOR
TAPE END SENSOR
TAPE TOP SENSOR
(UNTHREADING END SENSOR)
IC602
TAPE END
SENSOR
CASSETTE ON
CASSETTE DOWN
THREADING END
REC PROOF
SERVO SYSTEM CONTROL
VIDEO SYSTEM CONTROL
AUDIO SYSTEM CONTROL
PINCH
SOLENOID
DRIVE
BRAKE
SOLENOID
DRIVE
REEL MOTOR
CONTROL
IC603
THREADING
MOTOR
DRIVE
S DATA TS, S DATA ST


RF SW PULSE
COMP SYNC
S.C. 4.43MHz
RP-20 BOARD
IC501, IC503
REC/PB AMP
VIDEO HEAD
ACH, BCH
SS-34
BOARD
IC301
DRUM SERVO
CAPSTAN SERVO
COMP SYNC
S.C. 4.43MHz
IC304
LPF
DRIVE
DRUM
DRUM MOTOR
PG COIL A, B, S
M
IC306
LPF
DRIVE
CAPSTAN MOTOR
M
FG
CAPSTAN SPEED SELECTOR
IC303
FG AMP
CTL HEAD
IC302
CTL AMP
FU-25 BOARD
TRACKING
FUNCTION BUTTON
POWER
AUDIO HEAD
BIAS/ERASE OSC
AUDIO ERASE HEAD
FULL ERASE HEAD
IR
IC601
REMOTE CONTROL RECEIVER
RD-20 BOARD
S REEL ROTATION SENSOR
RD-21 BOARD
T REEL ROTATION SENSOR
TAPE END SENSOR
TAPE TOP SENSOR (UNTHREADING END SENSOR)
IC602
TAPE END SENSOR
SYSTEM CONTROL
SERVO SYSTEM CONTROL
VIDEO SYSTEM CONTROL
AUDIO SYSTEM CONTROL
PINCH SOLENOID DRIVE
PINCH SOLENOID
BRAKE SOLENOID DRIVE
BRAKE SOLENOID
REEL MOTOR CONTROL
M
REEL MOTOR
IC603
THREADING MOTOR DRIVE
M
THREADING MOTOR
CASSETTE ON
CASSETTE DOWN
THREADING END
REC PROOF
S DATA TS, S DATA ST
TM-57, 58 BOARD
IC1
TIMER
•CLOCK
•TIMER
•COUNTER
•FUNCTION INDICATOR
TIMER SET BUTTON
FLUORESCENT DISPLAY
PWR ON
PROG DATA
PR RST
AEP, UK, EC MODEL
PS-45, 46, 69 BOARD
IC001
SWD 12V
SWD 9V
POWER SUPPLY
AC IN
E MODEL
IC001
SWD 12V
SWD 9V
POWER SUPPLY
VOLTAGE SELECTOR
AC IN
PS-76, 67, VS-4 BOARD

3-4. SYSTEM CONTROL BLOCK DIAGRAM


FU-25 BOARD
S8 POWER
S6 PAUSE
S4 FF
S2 REW
S7 REC
S5 PB
S3 STOP
S1 EJECT
C ON
C DOWN
REC PROOF
THREADING END
IC601
SYSTEM CONTROL
17 PWR ON/OFF
3 F SW2
13 F SW1
15 M SW
24 TOP/END
25 END SENS
TAPE TOP/UNTHREAD END SENSOR
TAPE END SENSOR
IC602
TAPE END SENSOR
(TIMER BLOCK)
SYS RESET
74 SEND REQ
72 SYS REQ
61 RESET
63 S DATA ST
64 S DATA TS
65 S CLK
RD-20 BOARD
PC1
S REEL ROTATION SENSOR
22 S REEL FG
RD-21 BOARD
PC101
T REEL ROTATION SENSOR
23 T REEL FG
(AUDIO BLOCK)
AUDIO MUTE
BIAS CONT
PB
Q620
5 A MUTE
55 BIAS CONT 2
(VIDEO BLOCK)
PB
MC
78 PB + AUDIO DUB
79 REC · PAUSE
80 DOC PAUSE
3 MC
70 V BP
77 V MUTE
N BOARD
REMOTE CONTROL RECEIVER
Q617
66 IR
68 IR
CLOCK 60
CLOCK 59
CF601
Q623, Q624
THREADING END DETECT
31 UN BRK S
30 UN BRK H
32 PINCH S
35 PINCH H
Q602 SOLENOID DRIVE
Q604 SOLENOID DRIVE
Q601 SOLENOID DRIVE
Q603 SOLENOID DRIVE
BRAKE SOLENOID
PINCH SOLENOID
26 UNLOAD
27 LOAD
IC603
LOADING / THREADING MOTOR DRIVE
LOAD M (+)
LOAD M (−)
M
LOADING / THREADING MOTOR
48 REEL FWD
REEL FWD
58 PB + RECI
57 F/R
54 REEL STOP
53 UNLOAD
Q618
Q619
Q314-Q318, Q335-Q338, Q349
REEL MOTOR CONTROL
REEL M
M
REEL MOTOR
STOP
38 DP CUT
37 CAP REC
REC
49 CAP RVS
52 CAP STOP
Q621
47 CUE/REV
CUE/REV
39 DRUM ROT
41 CAP ROT
(SERVO BLOCK)
42 RESET 194
51 REC · PAUSE
28 DRUM STOP
69 RF SW P
29 DRUM LOCK
67 VD/CTL
SS-34 BOARD

3-5. SYSTEM CONTROL INTERFACE

[SYSTEM CONTROL-VIDEO BLOCK INTERFACE]

SIGNAL	I/O	IC601 Pin No.	STOP	FF	REW	PB	PB PAUSE	PICTURE SEARCH		REC OR TIMER REC	REC PAUSE	WAIT PAUSE	FR SEARCH	
								CUE	REV				CUE	REV
PAUSE	O	①	L	L	L	L	H	L	L	L	H	*[2]	L	L
MC	O	③	L	L	L	L	H	H	H	L	L	L	H	H
VBP	O	(70)	H	H	H	H	H	H	H	H	H	H	H	H
A'HEAD *[1]	O	(76)	L	L	L	L	L	L	L	L	L	L	L	L
V MUTE	O	(77)	L	L	L	L	L	L	L	L	L	L	L	L
PB + AUDIO DUB	O	(78)	L	L	L	H	H	H	H	L	L	L	H	H
REC · $\overline{\text{P}}$	O	(79)	L	L	L	L	L	L	L	H	L	L	L	L
DOC PAUSE *[1]	O	(80)	L	L	L	L	L	L	L	L	L	L	L	L

*[1] : NOT USED

*[2] : T = 2(SEC),
50% duty ratio pulse

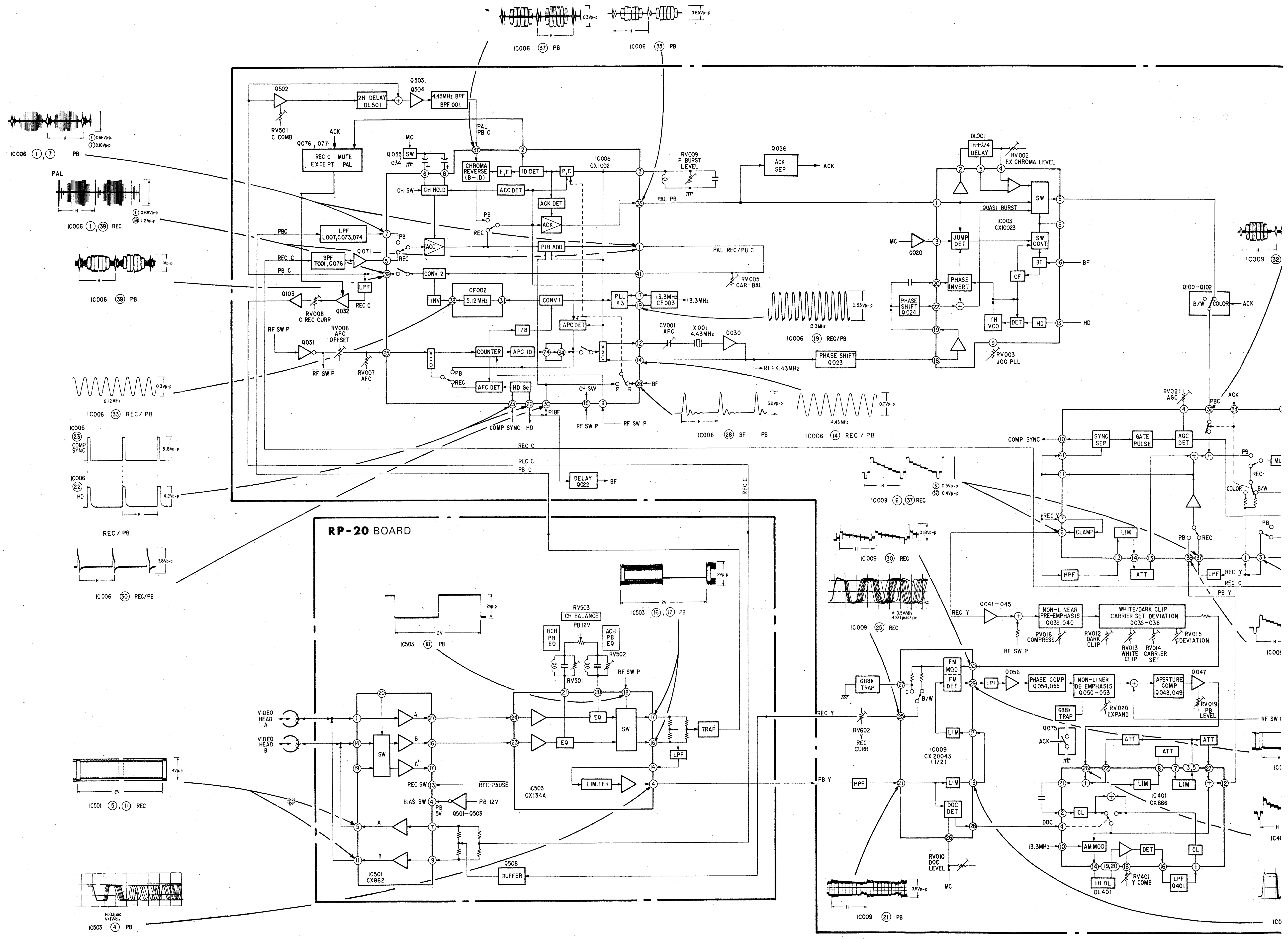
[SYSTEM CONTROL-SERVO BLOCK INTERFACE]

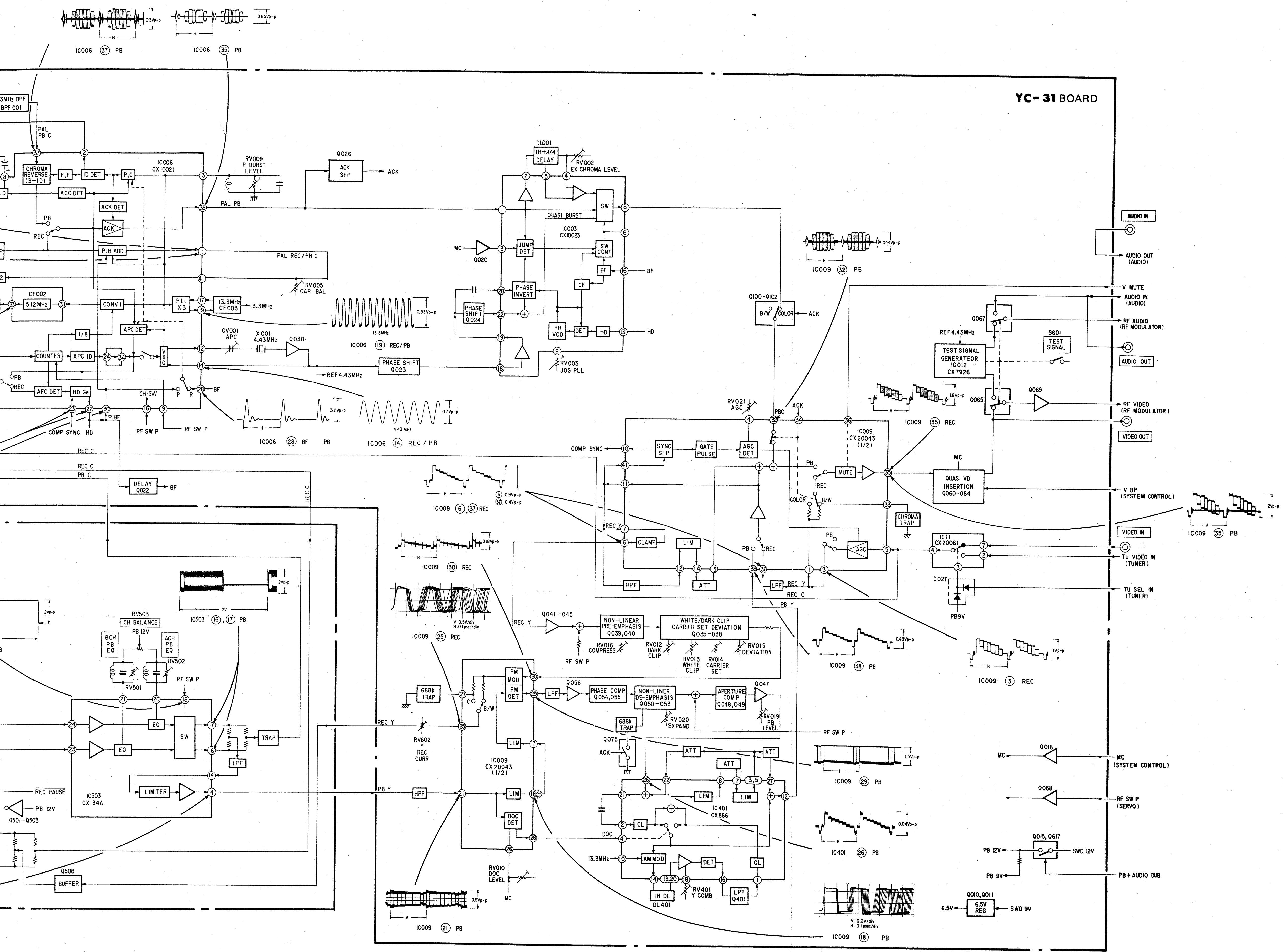
SIGNAL	I/O	IC601 Pin No.	STOP	FF	REW	PB	PB PAUSE	PICTURE SEARCH		REC OR TIMER REC	REC PAUSE	WAIT PAUSE	FR SEARCH	
								CUE	REV				CUE	REV
S REEL FG	I	㉒	H/L	FG	FG	FG	H/L	FG	FG	FG	H/L	H/L	FG	FG
T REEL FG	I	㉓	H/L	FG	FG	FG	H/L	FG	FG	FG	H/L	H/L	FG	FG
DRUM STOP	O	㉘	H	L	L	L	L	L	L	L	L	H	L	L
$\overline{\text{DRUM LOCK}}$	I	㉙	L	H	H	H	H	H	H	H	H	L	H	H
$\overline{\text{BRK ADJ}}$ *[1]	O	㊱	H	H	H	H	H	H	H	H	H	H	H	H
REC	O	㊲	L	L	L	L	L	L	L	H	H	L	L	L
DP CUT	O	㊳	L	L	L	L	L	H	H	L	L	L	H	H
DRUM ROT	I	㊴	L	H	H	H	H	H	H	H	H	L	H	H
CAP ROT	I	㊶	L	L	L	H	H	H	H	H	H	L	L	L
RESET 194	O	㊷	L	L	L	L	L	L	L	L	L	L	L	L
CAP CUT	O	㊸	L	L	L	L	L	L	L	L	L	L	L	L
PB + REC 2 *[1]	O	㊹	L	L	L	H	H	L	L	H	H	L	L	L
$\overline{\text{BIAS CONT 1}}$ *[1]	O	㊺	L	L	L	L	L	L	L	H	H	L	L	L
$\overline{\text{CUE}}$/REV	O	㊼	H	H	H	H	H	L	L	H	H	H	H	H
$\overline{\text{CAP RVS}}$	O	㊾	H	H	H	H	H	H	L	H	H	H	H	H
WITHN/$\overline{\text{N.LESS}}$	I	㊿	H	H	H	H	H	H	H	H	H	H	H	H
$\overline{\text{REC}\cdot\overline{\text{P}}}$	O	(51)	H	H	H	H	H	H	H	L	H	H	H	H
CAP STOP	O	(52)	H	H	H	L	L	L	L	L	L	H	H	H
$\overline{\text{PAUSE}}$	O	(56)	H	H	H	H	L	H	H	H	L	*[2]	H	H
VD/CTL	I	(67)	L	PB CTL	PB CTL	PB CTL	L	PB CTL	PB CTL	VD	L	L	PB CTL	PB CTL
RF SW P	I	(69)	H/L	RF SWP	RF SWP	RF SWP	RF SWP	RF SWP	RF SWP	RF SWP	RF SWP	H/L	RF SWP	RF SWP
NOISE P *[1]	I	(75)	L	L	L	L	L	L	L	L	L	L	L	L

*[1] : NOT USED

*[2] : T=2(SEC),
50% duty ratio pulse

3-3. VIDEO BLOCK DIAGRAM


IC006 ㊲ PB
IC006 ㉟ PB
0.3Vp-p
0.65Vp-p
IC006 ①,⑦ PB
① 0.66Vp-p
⑦ 0.18Vp-p
PAL
IC006 ①,㊴ REC
① 0.68Vp-p
㊴ 1.2Vp-p
IC006 ㊴ PB
1Vp-p
IC006 ㉝ REC/PB
5.12MHz
0.3Vp-p
IC006 ㉓ COMP SYNC
3.8Vp-p
IC006 ㉒ HD
4.2Vp-p
REC/PB
3.8Vp-p
IC006 ㉚ REC/PB
Q502
RV501 C COMB
2H DELAY DL501
Q503
Q504
4.43MHz BPF BPF 001
PAL PB C
ACK
Q076, 077
REC C MUTE EXCEPT PAL
MC
Q033 034 SW
CHROMA REVERSE (B-ID)
F.F
ID DET
P.C
IC006 CX10021
CH·SW
CH HOLD
ACC DET
ACK DET
ACK
PB
REC
PBC
LPF L007,C073,074
REC C
BPF T001,C076
Q071
ACC
PIB ADD
PB C
CONV 2
LPF
Q103
RV008 C REC CURR
Q032
INV
CF002 5.12MHz
CONV 1
PLL X3
13.3MHz CF003
13.3MHz
RF SW P
RV006 AFC OFFSET
Q031
RV007 AFC
1/8
APC DET
VCO
COUNTER
APC ID
VXO
AFC DET
HD Ge
CH·SW
COMP SYNC
HD
PIBF
RF SW P
P R
BF
REC C
PB C
DELAY Q022
RV009 P BURST LEVEL
PAL PB
PAL REC/PB C
RV005 CAR-BAL
CV001 APC
X001 4.43MHz
Q030
REF 4.43MHz
PHASE SHIFT Q023
0.53Vp-p
13.3MHz
IC006 ⑲ REC/PB
IC006 ㉘ BF PB
3.2Vp-p
IC006 ⑭ REC/PB
0.7Vp-p
4.43MHz
Q026
ACK SEP
DL001 1H+λ/4 DELAY
RV002 EX CHROMA LEVEL
QUASI BURST
IC003 CX10023
SW
SW CONT
BF
CF
MC
Q020
JUMP DET
PHASE INVERT
PHASE SHIFT Q024
fH VCO
DET
HD
RV003 JOG PLL
IC009 ㉜
Q100-Q102
B/W COLOR
RV021 AGC
PBC
COMP SYNC
SYNC SEP
GATE PULSE
AGC DET
MU
COLOR
B/W
REC Y
CLAMP
LIM
HPF
ATT
LPF
REC Y
REC C
PB Y
IC009 ⑥,㊲ REC
⑥ 0.9Vp-p
㊲ 0.4Vp-p
IC009 ㉚ REC
0.18Vp-p
V: 0.5V/div
H: 0.1μsec/div
IC009 ㉕ REC
Q041-045
RF SW P
NON-LINEAR PRE-EMPHASIS Q039,040
RV016 COMPRESS
WHITE/DARK CLIP CARRIER SET DEVIATION Q035-038
RV012 DARK CLIP
RV013 WHITE CLIP
RV014 CARRIER SET
RV015 DEVIATION
688k TRAP
FM MOD
FM DET
Q056
PHASE COMP Q054,055
NON-LINER DE-EMPHASIS Q050-053
APERTURE COMP Q048,049
Q047
RV019 PB LEVEL
RV020 EXPAND
RF SW P
RV602 Y REC CURR
IC009 CX20043 (1/2)
DOC DET
RV010 DOC LEVEL
MC
Q075
ACK
IC401 CX866
DOC
13.3MHz
AM MOD
IH DL DL401
RV401 Y COMB
LPF Q401
CL
IC009 ㉑ PB
0.6Vp-p
RP-20 BOARD
IC503 ⑱ PB
2Vp-p
IC503 ⑯,⑰ PB
RV503 CH BALANCE
PB 12V
BCH PB EQ
ACH PB EQ
RV501
RV502
RF SW P
VIDEO HEAD A
VIDEO HEAD B
SW
A B A'
EQ
TRAP
LPF
LIMITER
IC503 CX134A
REC SW
REC·PAUSE
BIAS SW
PB 12V
PB 5V
Q501-Q503
Q508 BUFFER
IC501 CX862
IC501 ⑤,⑪ REC
4Vp-p
H: 0.1μsec
V: 1V/div
IC503 ④ PB


YC-31 BOARD
IC006 (37) PB
IC006 (35) PB
0.3Vp-p
0.65Vp-p
3MHz BPF
BPF 001
PAL PB C
CHROMA REVERSE (B-ID)
F,F
ID DET
P,C
ACC DET
ACK DET
ACK
PIB ADD
IC006 CX10021
RV009 P BURST LEVEL
Q026 ACK SEP
ACK
PAL PB
PAL REC/PB C
RV005 CAR-BAL
CF002 5.12MHz
CONV I
PLL X3
13.3MHz CF003
13.3MHz
APC DET
1/8
COUNTER
APC ID
VXO
CV001 APC
X001 4.43MHz
Q030
REF 4.43MHz
PHASE SHIFT Q023
AFC DET
HD Ge
CH·SW
COMP SYNC
HD
P1BF
RF SW P
BF
IC006 (19) REC/PB
0.53Vp-p
13.3MHz
IC006 (28) BF PB
3.2Vp-p
IC006 (14) REC / PB
0.7Vp-p
4.43MHz
REC C
PB C
DELAY Q022
DL001 1H+λ/4 DELAY
RV002 EX CHROMA LEVEL
SW
QUASI BURST
IC003 CX10023
MC
Q020
JUMP DET
SW CONT
CF
PHASE INVERT
PHASE SHIFT Q024
1H VCO
DET
HD
RV003 JOG PLL
IC009 (32) PB
0.44Vp-p
Q100-Q102
B/W
COLOR
RV021 AGC
PBC
SYNC SEP
GATE PULSE
AGC DET
IC009 CX20043 (1/2)
MUTE
CHROMA TRAP
CLAMP
LIM
HPF
ATT
LPF
REC Y
PB Y
AGC
IC11 CX20061
D027
PB9V
V MUTE
AUDIO IN (AUDIO)
Q067
REF 4.43MHz
TEST SIGNAL GENERATEOR IC012 CX7926
S601 TEST SIGNAL
RF AUDIO (RF MODULATOR)
AUDIO IN
AUDIO OUT (AUDIO)
AUDIO OUT
Q065
Q069
RF VIDEO (RF MODULATOR)
VIDEO OUT
QUASI VD INSERTION Q060-064
V BP (SYSTEM CONTROL)
VIDEO IN
TU VIDEO IN (TUNER)
TU SEL IN (TUNER)
IC009 (35) PB
2Vp-p
IC009 (35) REC
1.8Vp-p
IC009 (6), (37) REC
(6) 0.9Vp-p
(37) 0.4Vp-p
IC009 (30) REC
0.18Vp-p
IC009 (25) REC
V: 0.5V/div H: 0.1μsec/div
Q041-045
NON-LINEAR PRE-EMPHASIS Q039,040
WHITE/DARK CLIP CARRIER SET DEVIATION Q035-038
RV016 COMPRESS
RV012 DARK CLIP
RV013 WHITE CLIP
RV014 CARRIER SET
RV015 DEVIATION
IC009 (38) PB
0.48Vp-p
IC009 (3) REC
1Vp-p
688k TRAP
FM MOD
FM DET
Q056
PHASE COMP Q054,055
NON-LINER DE-EMPHASIS Q050-053
APERTURE COMP Q048,049
Q047
RV019 PB LEVEL
RV020 EXPAND
Q075
RV602 Y REC CURR
IC009 CX20043 (1/2)
DOC DET
RV010 DOC LEVEL
IC401 CX866
AM MOD
CL
1H DL DL401
RV401 Y COMB
LPF Q401
13.3MHz
DOC
IC009 (29) PB
1.5Vp-p
IC401 (26) PB
0.04Vp-p
IC009 (18) PB
V: 0.2V/div H: 0.1μsec/div
IC009 (21) PB
0.6Vp-p
Q016
MC (SYSTEM CONTROL)
Q068
RF SW P (SERVO)
Q015, Q617
PB 12V
SWD 12V
PB 9V
PB+AUDIO DUB
Q010, Q011 6.5V REG
6.5V
SWD 9V
IC503 (16), (17) PB
2Vp-p
2V
RV503 CH BALANCE
PB 12V
BCH PB EQ
ACH PB EQ
RV502
RV501
EQ
SW
TRAP
LPF
LIMITER
IC503 CX134A
REC·PAUSE
Q501-Q503
Q508 BUFFER

[SYSTEM CONTROL-REEL MOTOR BLOCK INTERFACE]

SIGNAL	I/O	IC601 Pin No.	EJECTED	LOADING	THREADING	STOP	UN-THREADING	UN-LOADING	FF	REW	PB	PB PAUSE	PICTURE SEARCH		REC	REC PAUSE	FR SEARCH	
													CUE	REV			CUE	REV
CUE/REV	O	(47)	H	H	H	H	H	H	H	H	H	H	L	L	H	H	H	H
REEL FWD	O	(48)	L	L	L	L	H	L	L	H	L	L	L	H	L	L	L	H
REEL STOP	O	(54)	H	H	L	H	L	H	L	L	L	H	L	L	L	H	L	L
F/R	O	(57)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H
PB + REC 1	O	(58)	L	L	L	L	L	L	L	L	H	H	L	L	H	H	L	L
UNLOAD	O	(53)	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H

[SYSTEM CONTROL-MECHANISM BLOCK INTERFACE]

SIGNAL	I/O	IC601 Pin No.	EJECTED	LOADING	THREADING	STOP	UN-THREADING	UN-LOADING	FF	REW	PB	PB PAUSE	PICTURE SEARCH		REC	REC PAUSE	FR SEARCH	
													CUE	REV			CUE	REV
M SW *1	I	(15)	5V	3V	1V (2V)	0V	1V (2V)	3V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V
TOP/END	O	(24)	L	L	L	L	H	H	L	H	L	L	L	H	L	L	L	H
END SENS	I	(25)	H	H/L	H/L	H	H	L	H	H	H	H	H	H	H	H	H	H
UNLOAD	O	(26)	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L
LOAD	O	(27)	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L
UNBRK (H)	O	(30)	L	L	L	L	L	L	H	H	H	L	H	H	H	L	H	H
UNBRK (S)	O	(31)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
PINCH (S)	O	(32)	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
PINCH (H)	O	(35)	L	H	L	L	L	H	L	L	H	L	H	H	H	L	L	L

*1 ( ) : THE SAFTY TAB OF THE CASSETTE IS BROKEN

[SYSTEM CONTROL-AUDIO BLOCK INTERFACE]

SIGNAL	I/O	IC601 Pin No.	MODE											
			STOP	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC OR TIMER REC	REC·PAUSE	WAIT PAUSE	FR SEARCH	
								CUE	REV				CUE	REV
AUDIO DUB *1	O	(4)	L	L	L	L	L	L	L	L	L	L	L	L
A MUTE	O	(5)	L	L	L	L	H	H	H	L	L	L	H	H
BIAS CONT 2	O	(55)	L	L	L	L	L	L	L	H	L	L	L	L
PB + AUDIO DUB	O	(78)	L	L	L	H	H	H	H	L	L	L	H	H

*1 NOT USED

[SYSTEM CONTROL-ITS PERIPHERAL CIRCUIT INTERFACE]

SIGNAL	I/O	IC601 Pin No.	MODE									
			USUAL	PRESSED BUTTON								
				EJECT	STOP	PB	REC		REW	FF	PAUSE	POWER
F SW 1	I	⑬	5V	0V	1V	2V	3V		–	–	–	–
F SW 2	I	⑭	5V	–	–	–	–		0V	1V	2V	–
V HOLD *[1]	I	⑯	0V – 5V *[2]	–	–	–	–		–	–	–	–
$\overline{\text{POWER ON}}$/OFF	I	⑰	5V	–	–	–	–		–	–	–	0V
$\overline{\text{IR}}$	I	(66), (68)	5V	–	–	–	–		–	–	–	–

*[1]: NOT USED
*[2]: BY V HOLD VR

[SYSTEM CONTROL-TIMER BLOCK INTERFACE]

SIGNAL	I/O	IC601 Pin No.	MODE
			USUAL
S DATA ST	O	(63)	L
S DATA TS	I	(64)	L
$\overline{\text{S CLK}}$	I	(65)	H
$\overline{\text{SYS REQ}}$	O	(72)	H
$\overline{\text{SEND REQ}}$	I	(74)	H

[TIMER-TUNER INTERFACE (1)]

SIGNAL	I/O	IC001 Pin No.	FL DISPLAY INDICATION		
			PROG. No.	AU	BLANK
P00	I	①	*[1]	L	L
P01	I	②	*[1]	L	L
P02	I	③	*[1]	L	L
P03	I	④	*[1]	L	L
P10	I	⑤	*[1]	L	L
P11	I	⑥	*[1]	L	L
$\overline{\text{PR RESET}}$	O	(58)	H	H	H
$\overline{\text{PR UP}}$	O	(59)	H	H	H
PR LOCK	O	(60)	L	L	L
TU SEL	O	(61)	H	L	L

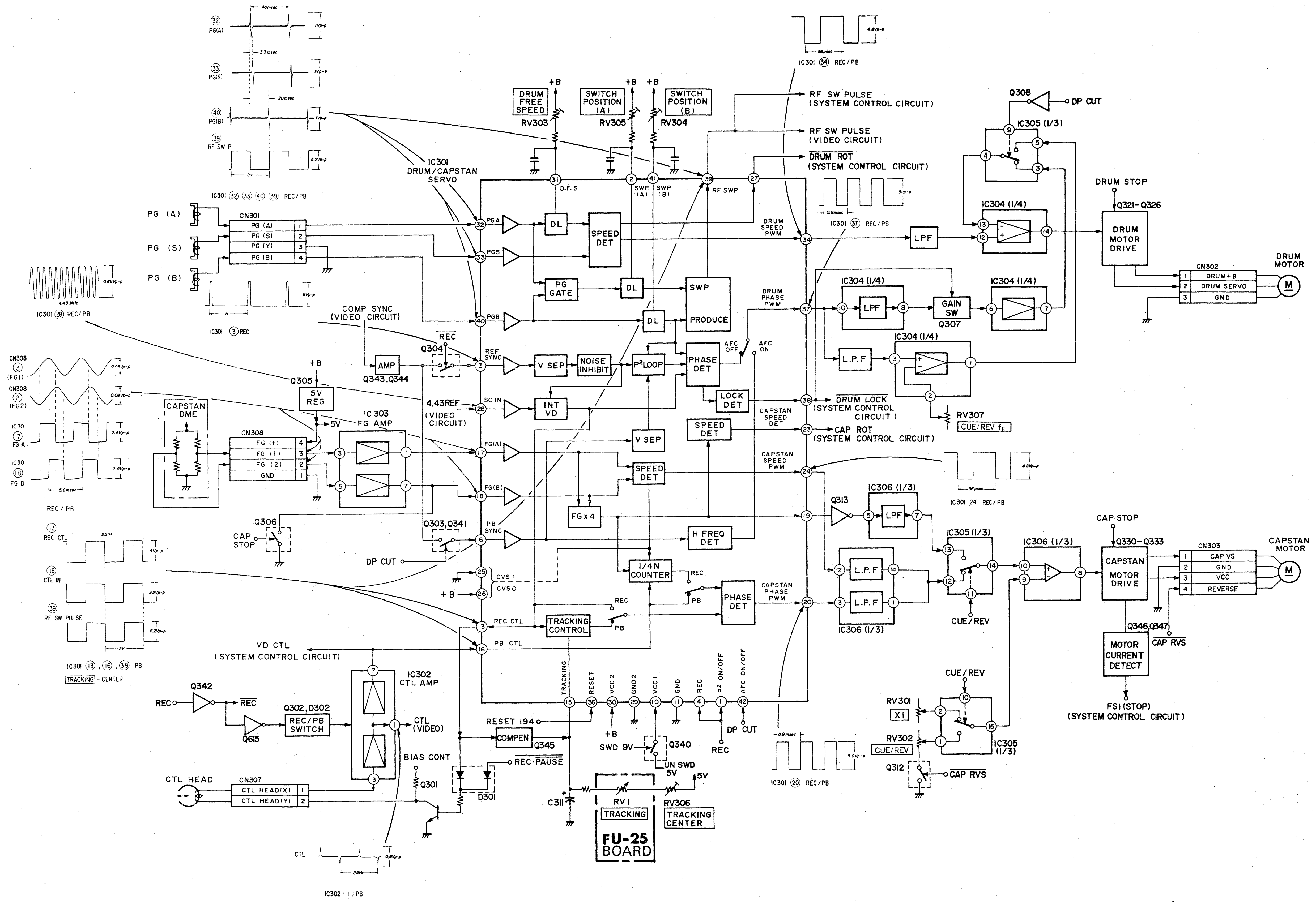
*[1] REFER TO "TIMER–TUNER INTERFACE (2)".

[TIMER-TUNER INTERFACE (2)]

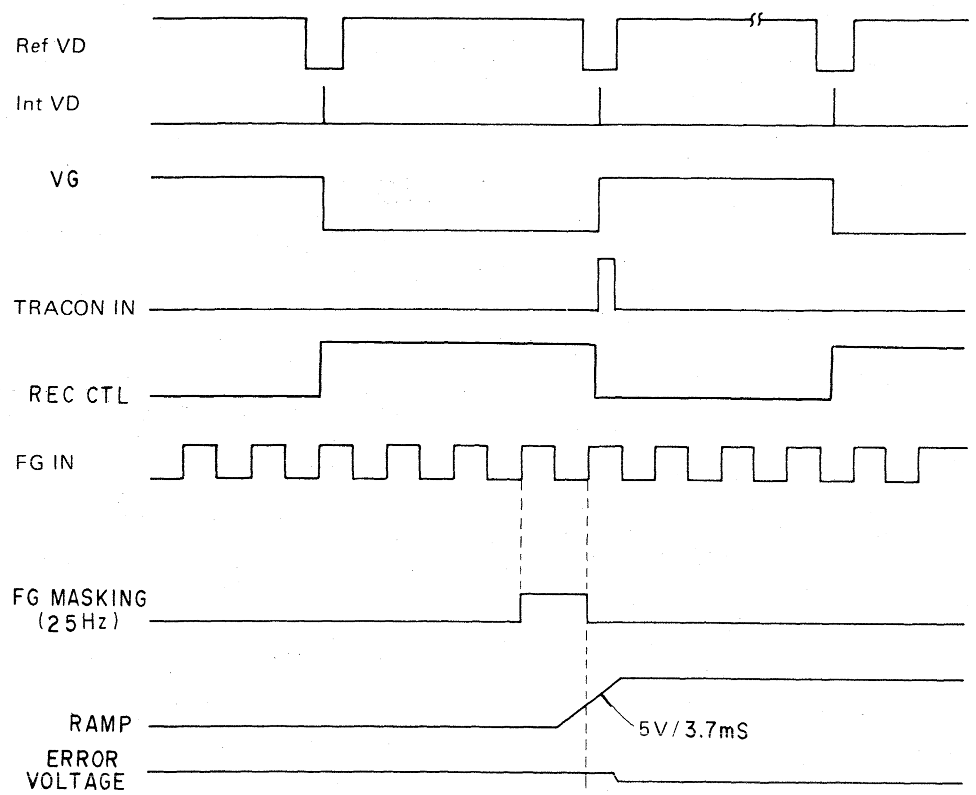
	IC101 INPUT						IC101 OUTPUT (INDICATION)			IC101 INPUT						IC101 OUTPUT (INDICATION)	
PROG. No.	P11	P10	P03	P02	P01	P00	10 digit	1 digit	PROG. No.	P11	P10	P03	P02	P01	P00	10 digit	1 digit
1	H	H	L	L	L	H		1	18*[2]	L	H	H	L	L	L	1	8
2	H	H	L	L	H	L		2	19*[2]	L	H	H	L	L	H	1	9
3	H	H	L	L	H	H		3	20*[2]	H	L	L	L	L	L	2	0
4	H	H	L	H	L	L		4	21*[2]	H	L	L	L	L	H	2	1
5	H	H	L	H	L	H		5	22*[2]	H	L	L	L	H	L	2	2
6	H	H	L	H	H	L		6	23*[2]	H	L	L	L	H	H	2	3
7	H	H	L	H	H	H		7	24*[2]	H	L	L	H	L	L	2	4
8	H	H	H	L	L	L		8	25*[2]	H	L	L	H	L	H	2	5
9	H	H	H	L	L	H		9	26*[2]	H	L	L	H	H	L	2	6
10	L	H	L	L	L	L	1	0	27*[2]	H	L	L	H	H	H	2	7
11	L	H	L	L	L	H	1	1	28*[2]	H	L	H	L	L	L	2	8
12	L	H	L	L	H	L	1	2	29*[2]	H	L	H	L	L	H	2	9
13*[2]	L	H	L	L	H	H	1	3	0*[2]	H	H	L	L	L	L		0
14*[2]	L	H	L	H	L	L	1	4	LINE	L	L	H	H	L	L	A	U
15*[2]	L	H	L	H	L	H	1	5	BLANK	H	H	H	H	H	H		
16*[2]	L	H	L	H	H	L	1	6	1–*[2]	L	H	H	H	H	H	1	
17*[2]	L	H	L	H	H	H	1	7	2–*[2]	H	L	H	H	H	H	2	

*[2] EC MODEL ONLY

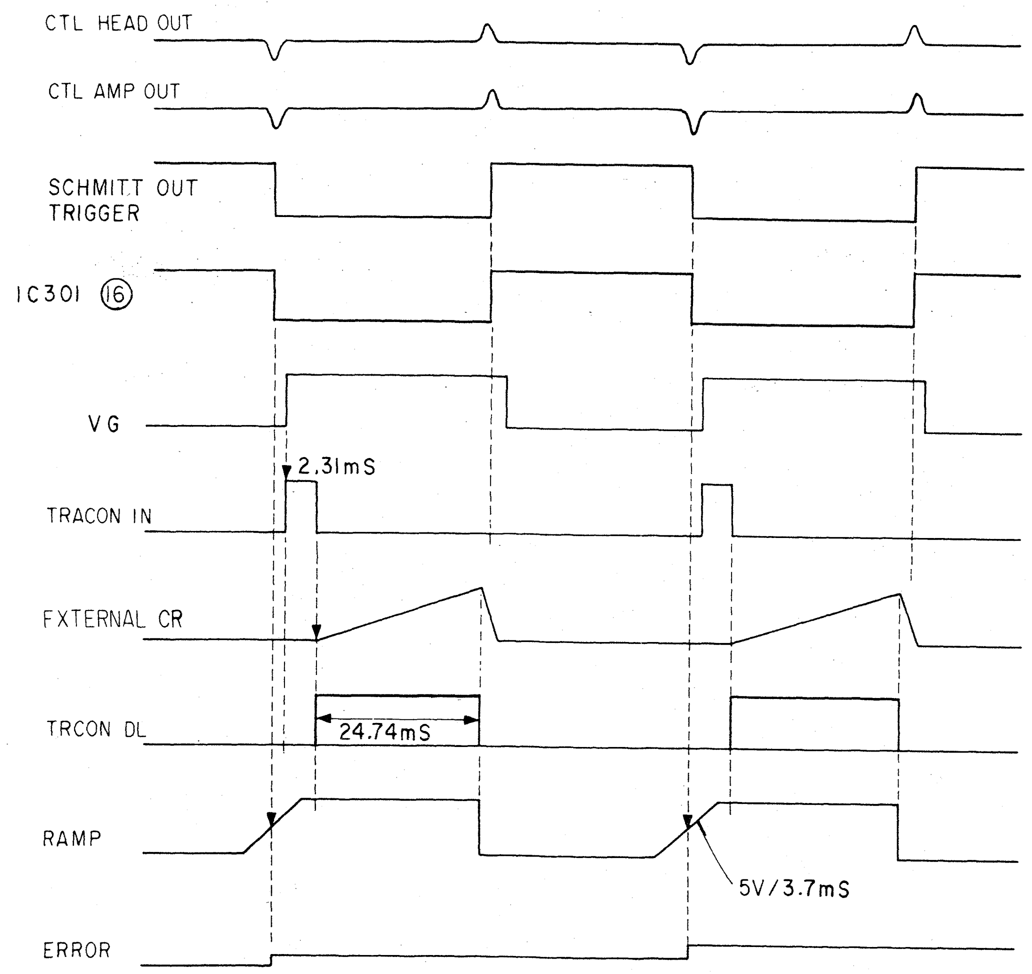
3-6. SERVO BLOCK DIAGRAM


IC301 DRUM/CAPSTAN SERVO
PG (A)
PG (S)
PG (B)
CN301
PG (A)
PG (S)
PG (Y)
PG (B)
IC301 ㉜ ㉝ ㊵ ㊴ REC/PB
IC301 ㉘ REC/PB
IC301 ③ REC
COMP SYNC (VIDEO CIRCUIT)
REC
Q304
AMP
Q343,Q344
+B
Q305
5V REG
5V
IC 303 FG AMP
CAPSTAN DME
CN308
FG (+)
FG (1)
FG (2)
GND
4.43REF
(VIDEO CIRCUIT)
Q306
CAP STOP
DP CUT
Q303,Q341
REC/PB
REC CTL
CTL IN
RF SW PULSE
IC301 ⑬, ⑯, ㊴ PB
TRACKING - CENTER
VD CTL (SYSTEM CONTROL CIRCUIT)
Q342
REC
Q302,D302
REC/PB SWITCH
Q615
IC302 CTL AMP
CTL (VIDEO)
BIAS CONT
Q301
CTL HEAD
CN307
CTL HEAD(X)
CTL HEAD(Y)
CTL
IC302 ① PB
RESET 194
COMPEN
Q345
REC·PAUSE
D301
C311
RV1
TRACKING
FU-25 BOARD
RV306
TRACKING CENTER
SWD 9V
Q340
UN SWD
5V
DP CUT
REC
DRUM FREE SPEED
RV303
SWITCH POSITION (A)
RV305
SWITCH POSITION (B)
RV304
D.F.S
SWP (A)
SWP (B)
RF SWP
PGA
PGS
PGB
REF SYNC
SC IN
FG(A)
FG(B)
PB SYNC
CVS I
CVS O
PB CTL
DL
SPEED DET
PG GATE
SWP PRODUCE
V SEP
NOISE INHIBIT
P²LOOP
PHASE DET
AFC OFF
AFC ON
LOCK DET
INT VD
SPEED DET
FG x 4
H FREQ DET
1/4N COUNTER
TRACKING CONTROL
TRACKING
RESET
VCC 2
GND 2
VCC 1
GND
REC
P2 ON/OFF
AFC ON/OFF
RF SW PULSE (SYSTEM CONTROL CIRCUIT)
RF SW PULSE (VIDEO CIRCUIT)
DRUM ROT (SYSTEM CONTROL CIRCUIT)
IC301 ㉞ REC/PB
IC301 ㊲ REC/PB
DRUM SPEED PWM
DRUM PHASE PWM
LPF
IC304 (1/4)
GAIN SW
Q307
L.P.F
RV307
CUE/REV f_H
DRUM LOCK (SYSTEM CONTROL CIRCUIT)
CAPSTAN SPEED DET
CAP ROT (SYSTEM CONTROL CIRCUIT)
CAPSTAN SPEED PWM
IC301 24 REC/PB
Q313
IC306 (1/3)
CAPSTAN PHASE PWM
IC301 ⑳ REC/PB
IC305 (1/3)
CUE/REV
RV301
X1
RV302
CUE/REV
Q312
CAP RVS
Q308
DP CUT
IC305 (1/3)
DRUM STOP
Q321-Q326
DRUM MOTOR DRIVE
CN302
DRUM+B
DRUM SERVO
GND
DRUM MOTOR
M
CAP STOP
Q330-Q333
CAPSTAN MOTOR DRIVE
CN303
CAP VS
GND
VCC
REVERSE
CAPSTAN MOTOR
Q346,Q347
CAP RVS
MOTOR CURRENT DETECT
FS1 (STOP) (SYSTEM CONTROL CIRCUIT)

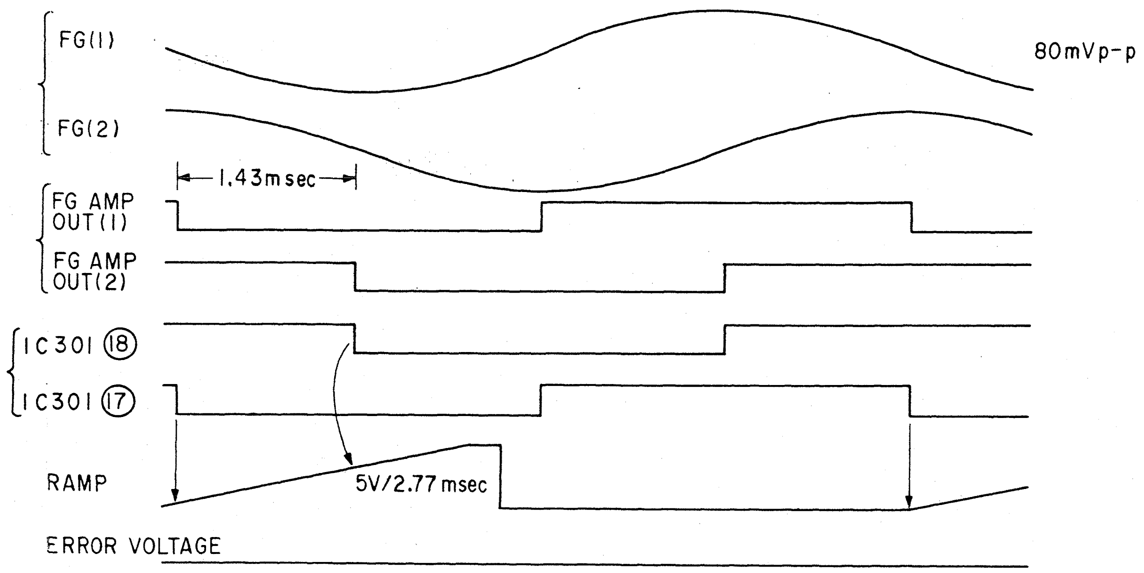
3-7. CAPSTAN PHASE SYSTEM TIMING CHART (REC)


Ref VD
Int VD
VG
TRACON IN
REC CTL
FG IN
FG MASKING (25Hz)
RAMP
5V/3.7mS
ERROR VOLTAGE

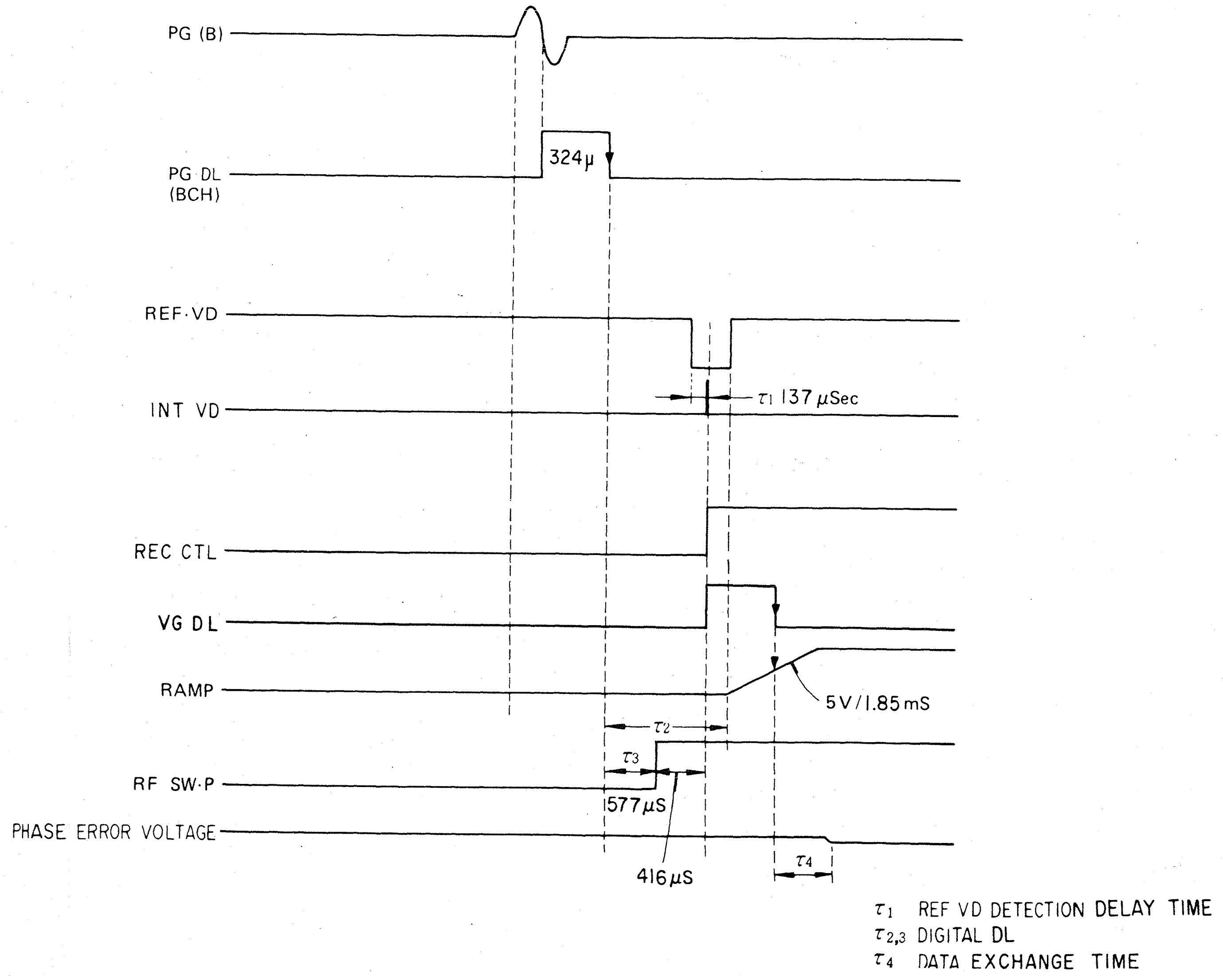
3-8. CAPSTAN PHASE SYSTEM TIMING CHART (PB)


CTL HEAD OUT
CTL AMP OUT
SCHMITT TRIGGER OUT
IC301 ⑯
VG
2.31mS
TRACON IN
FXTERNAL CR
TRCON DL
24.74mS
RAMP
5V/3.7mS
ERROR

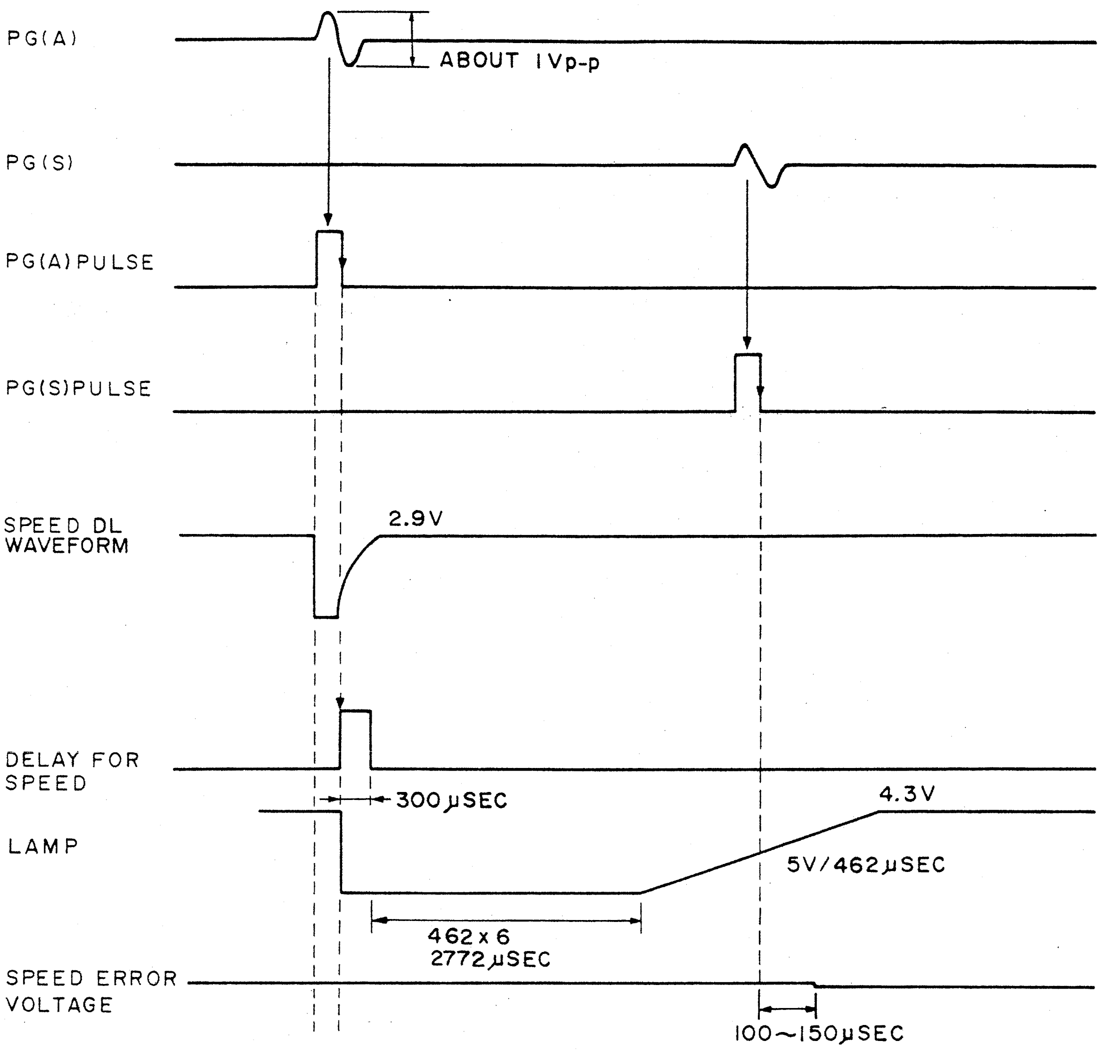
3-9. CAPSTAN SPEED SYSTEM TIMING CHART


FG(1)
FG(2)
80mVp-p
1.43msec
FG AMP OUT(1)
FG AMP OUT(2)
IC301 ⑱
IC301 ⑰
RAMP
5V/2.77msec
ERROR VOLTAGE

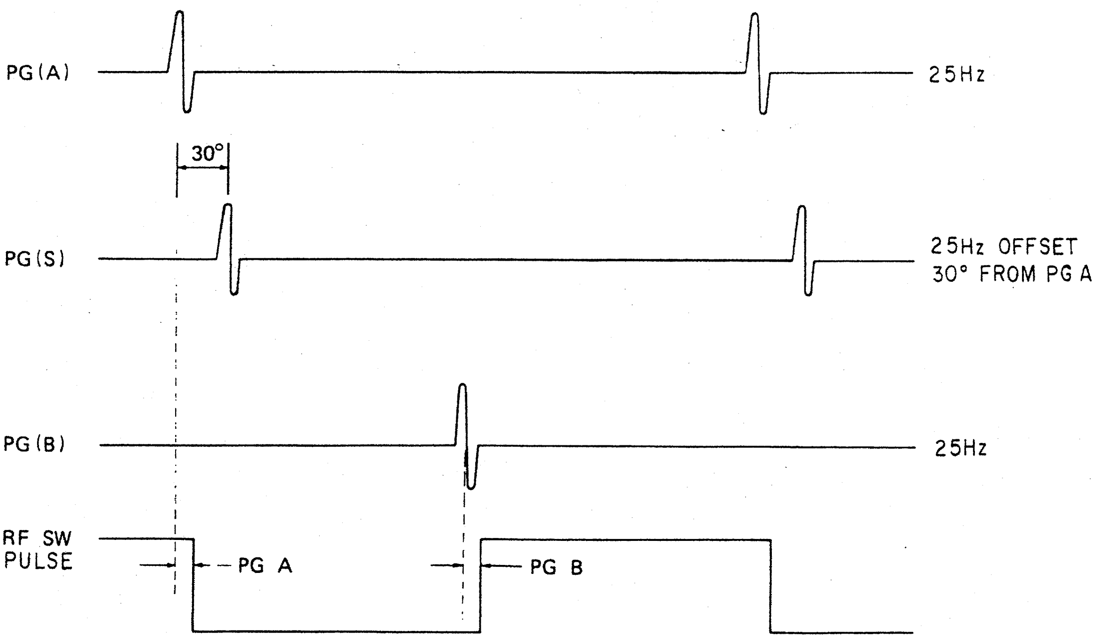
3-10. DRUM PHASE SYSTEM TIMING CHART


PG (B)
PG DL (BCH)
324μ
REF·VD
INT VD
τ1 137μSec
REC CTL
VG DL
RAMP
5V/1.85mS
τ2
τ3
RF SW·P
577μS
416μS
PHASE ERROR VOLTAGE
τ4
τ1 REF VD DETECTION DELAY TIME
τ2,3 DIGITAL DL
τ4 DATA EXCHANGE TIME

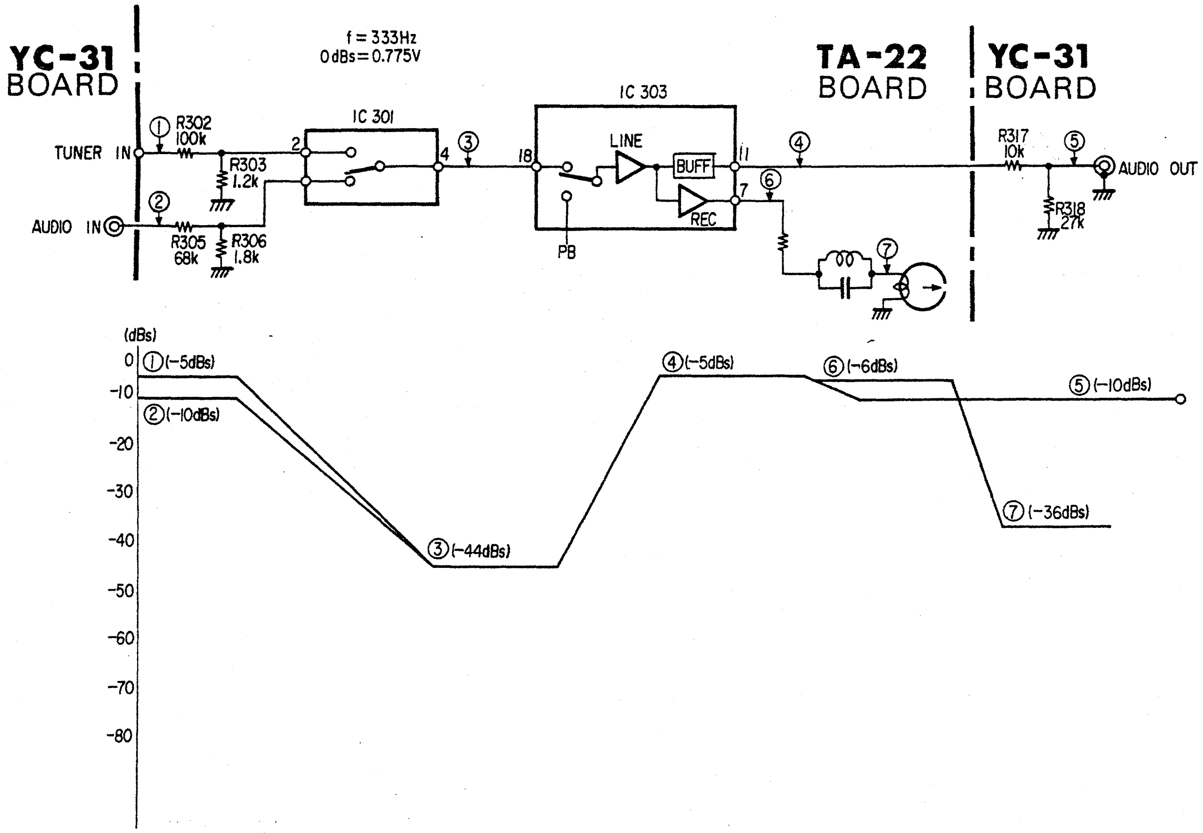
3-11. DRUM SPEED SYSTEM TIMING CHART


PG(A)
ABOUT 1Vp-p
PG(S)
PG(A) PULSE
PG(S) PULSE
SPEED DL WAVEFORM
2.9V
DELAY FOR SPEED
300µSEC
4.3V
LAMP
5V/462µSEC
462x6
2772µSEC
SPEED ERROR VOLTAGE
100~150µSEC

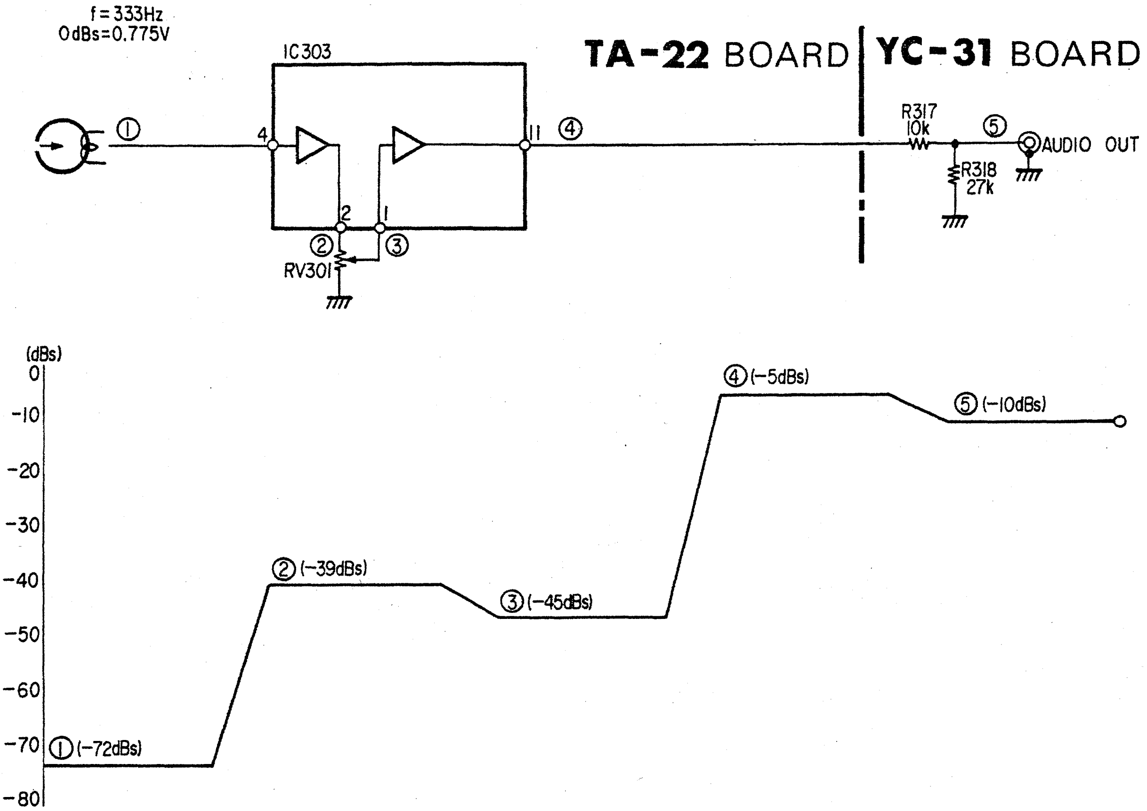
3-12. PG SIGNAL TIMING CHART


PG(A)
25Hz
30°
PG(S)
25Hz OFFSET
30° FROM PG A
PG(B)
25Hz
RF SW PULSE
PG A
PG B

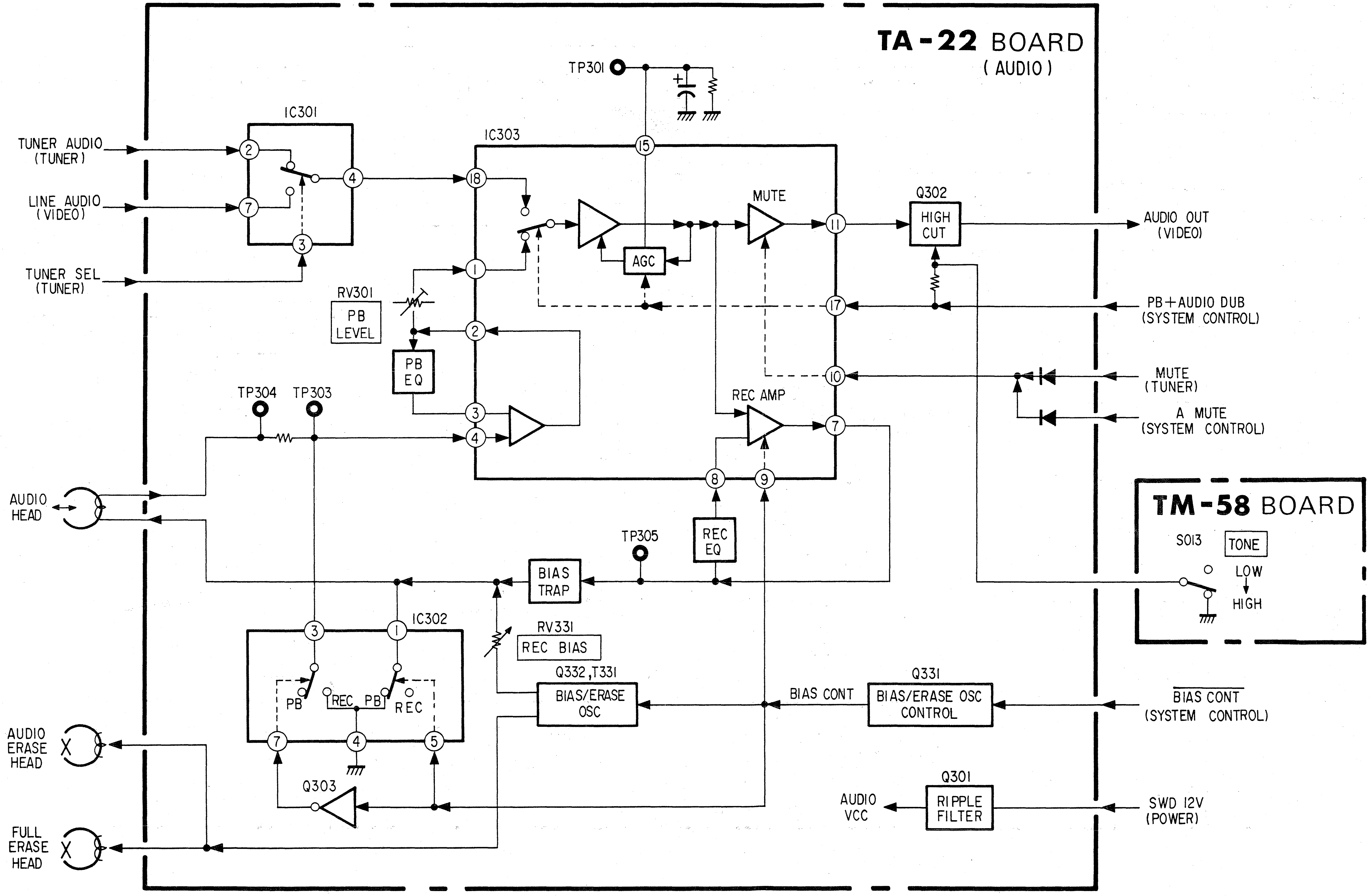
3-13. AUDIO LEVEL DIAGRAM (REC)


YC-31 BOARD
f = 333Hz
0dBs = 0.775V
TA-22 BOARD
YC-31 BOARD
IC 303
IC 301
TUNER IN
AUDIO IN
R302 100k
R303 1.2k
R305 68k
R306 1.8k
LINE
BUFF
REC
PB
R317 10k
R318 27k
AUDIO OUT
(dBs)
0
-10
-20
-30
-40
-50
-60
-70
-80
① (-5dBs)
② (-10dBs)
③ (-44dBs)
④ (-5dBs)
⑥ (-6dBs)
⑤ (-10dBs)
⑦ (-36dBs)

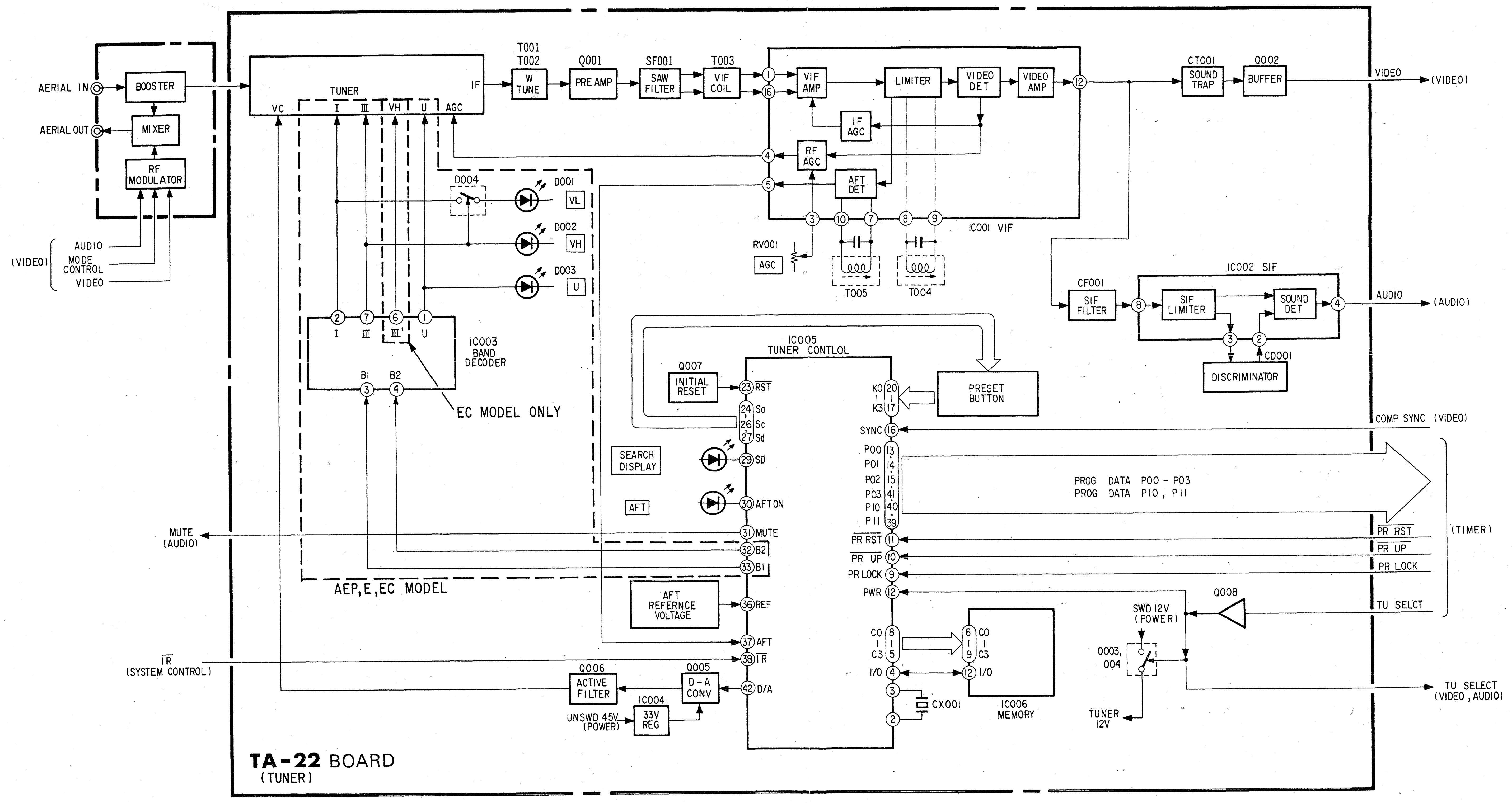
3-14. AUDIO LEVEL DIAGRAM (PB)


f = 333Hz
0dBs = 0.775V
IC303
TA-22 BOARD
YC-31 BOARD
RV301
R317 10k
R318 27k
AUDIO OUT
(dBs)
0
-10
-20
-30
-40
-50
-60
-70
-80
① (-72dBs)
② (-39dBs)
③ (-45dBs)
④ (-5dBs)
⑤ (-10dBs)

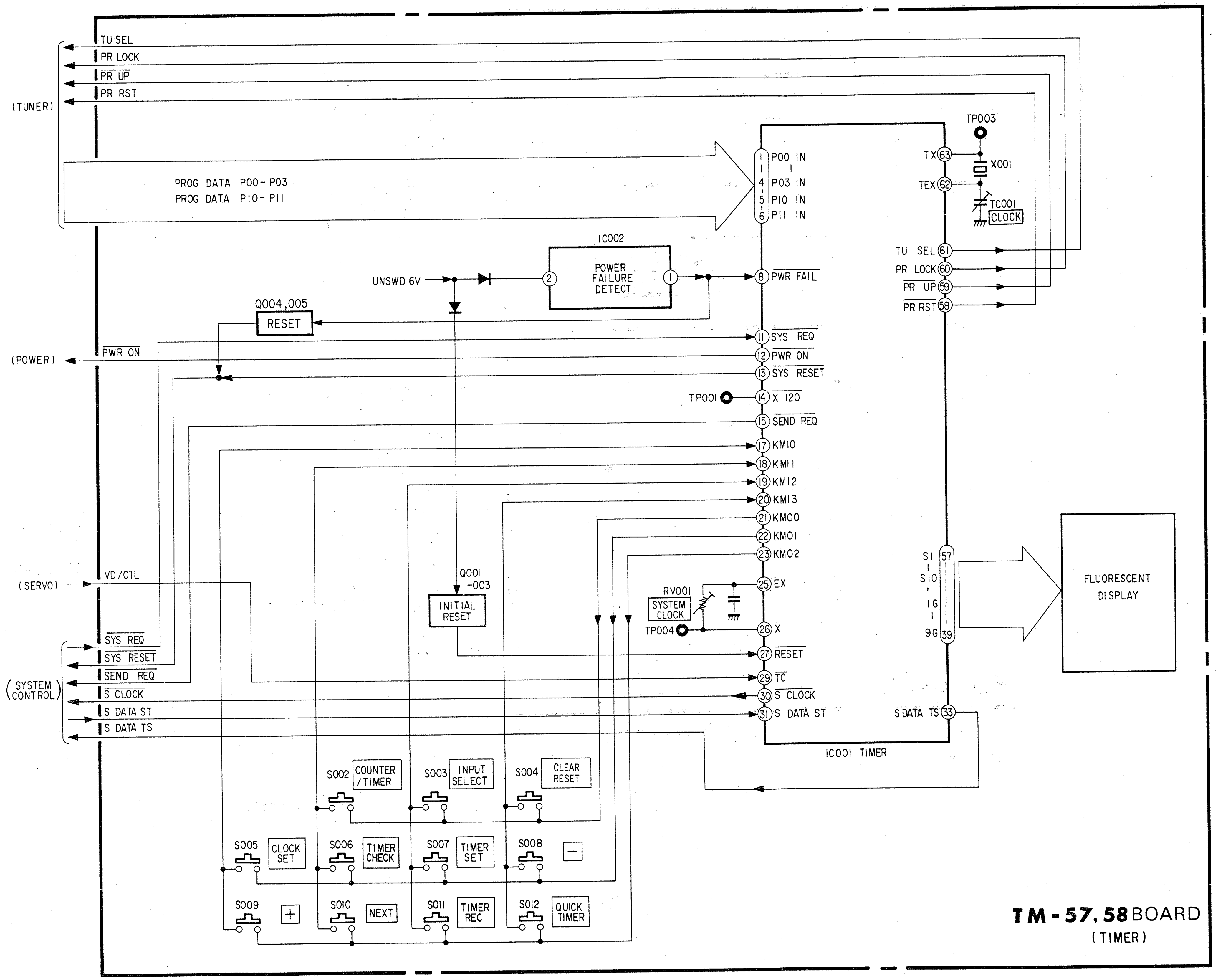
3-15. AUDIO BLOCK DIAGRAM


TA-22 BOARD
(AUDIO)
TP301
IC301
IC303
TUNER AUDIO
(TUNER)
LINE AUDIO
(VIDEO)
TUNER SEL
(TUNER)
MUTE
AGC
Q302
HIGH CUT
AUDIO OUT
(VIDEO)
PB+AUDIO DUB
(SYSTEM CONTROL)
MUTE
(TUNER)
A MUTE
(SYSTEM CONTROL)
RV301
PB LEVEL
PB EQ
TP304
TP303
REC AMP
AUDIO HEAD
TP305
REC EQ
BIAS TRAP
IC302
RV331
REC BIAS
Q332,T331
BIAS/ERASE OSC
BIAS CONT
Q331
BIAS/ERASE OSC CONTROL
BIAS CONT
(SYSTEM CONTROL)
PB
REC
PB
REC
Q303
AUDIO ERASE HEAD
FULL ERASE HEAD
Q301
AUDIO VCC
RIPPLE FILTER
SWD 12V
(POWER)
TM-58 BOARD
S013
TONE
LOW
HIGH

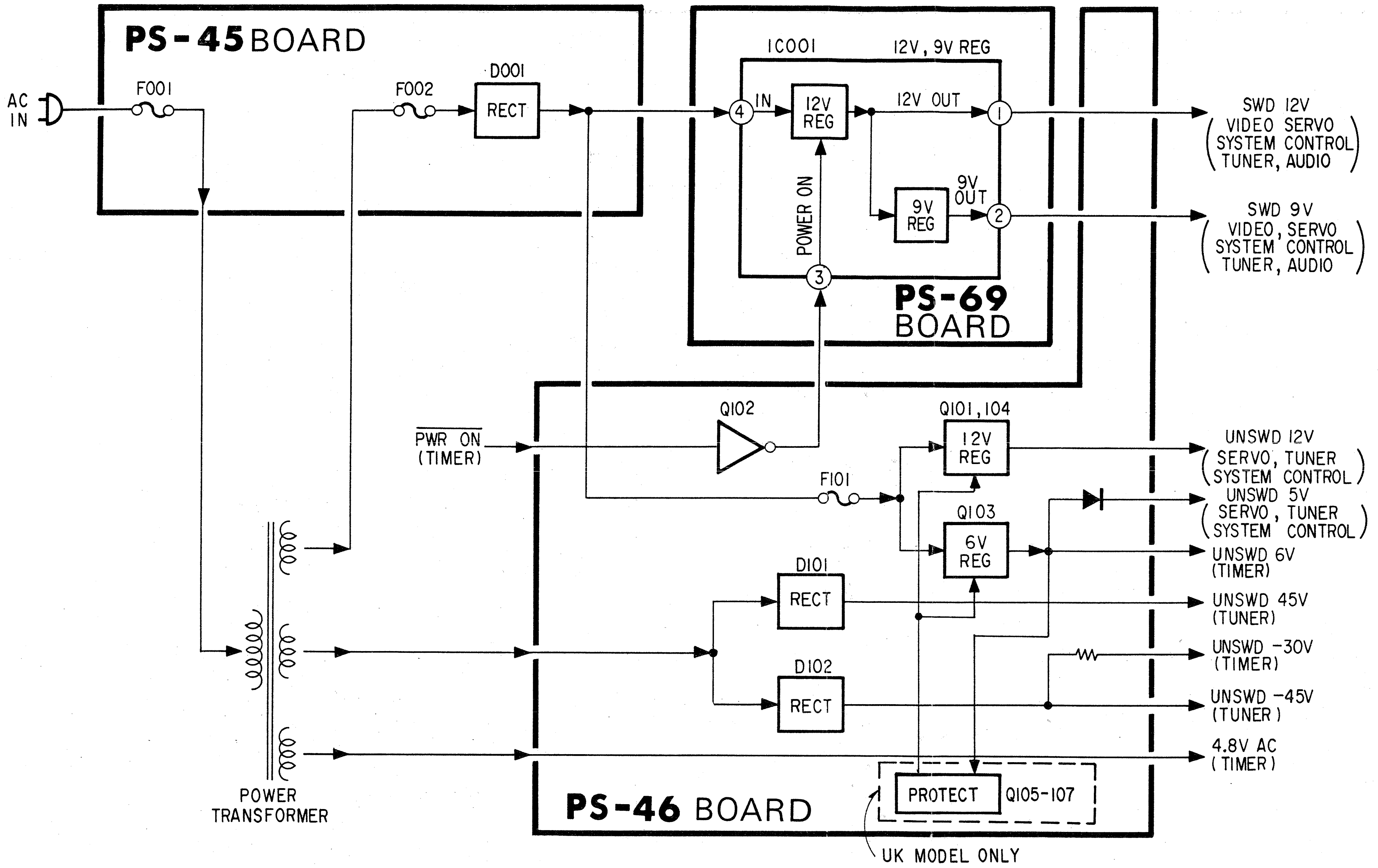
3-16. TUNER BLOCK DIAGRAM


AERIAL IN
BOOSTER
AERIAL OUT
MIXER
RF MODULATOR
AUDIO
(VIDEO)
MODE CONTROL
VIDEO
TUNER
VC
I
III
VH
U
AGC
IF
T001
T002
W TUNE
Q001
PRE AMP
SF001
SAW FILTER
T003
VIF COIL
VIF AMP
LIMITER
VIDEO DET
VIDEO AMP
IF AGC
RF AGC
AFT DET
IC001 VIF
RV001
AGC
T005
T004
CT001
SOUND TRAP
Q002
BUFFER
VIDEO
(VIDEO)
D004
D001
VL
D002
VH
D003
U
IC003 BAND DECODER
B1
B2
III'
EC MODEL ONLY
CF001
SIF FILTER
IC002 SIF
SIF LIMITER
SOUND DET
CD001
DISCRIMINATOR
AUDIO
(AUDIO)
IC005 TUNER CONTLOL
Q007
INITIAL RESET
RST
Sa
Sc
Sd
SEARCH DISPLAY
SD
AFT
AFT ON
MUTE
(AUDIO)
B2
B1
AEP, E, EC MODEL
AFT REFERNCE VOLTAGE
REF
AFT
IR
(SYSTEM CONTROL)
Q006
ACTIVE FILTER
Q005
D-A CONV
D/A
IC004
33V REG
UNSWD 45V (POWER)
PRESET BUTTON
K0
K3
SYNC
COMP SYNC (VIDEO)
P00
P01
P02
P03
P10
P11
PROG DATA P00 - P03
PROG DATA P10, P11
PR RST
PR UP
PR LOCK
PWR
(TIMER)
TU SELCT
Q008
SWD 12V (POWER)
Q003, 004
TUNER 12V
TU SELECT (VIDEO, AUDIO)
C0
C3
I/O
CX001
IC006 MEMORY
TA-22 BOARD (TUNER)

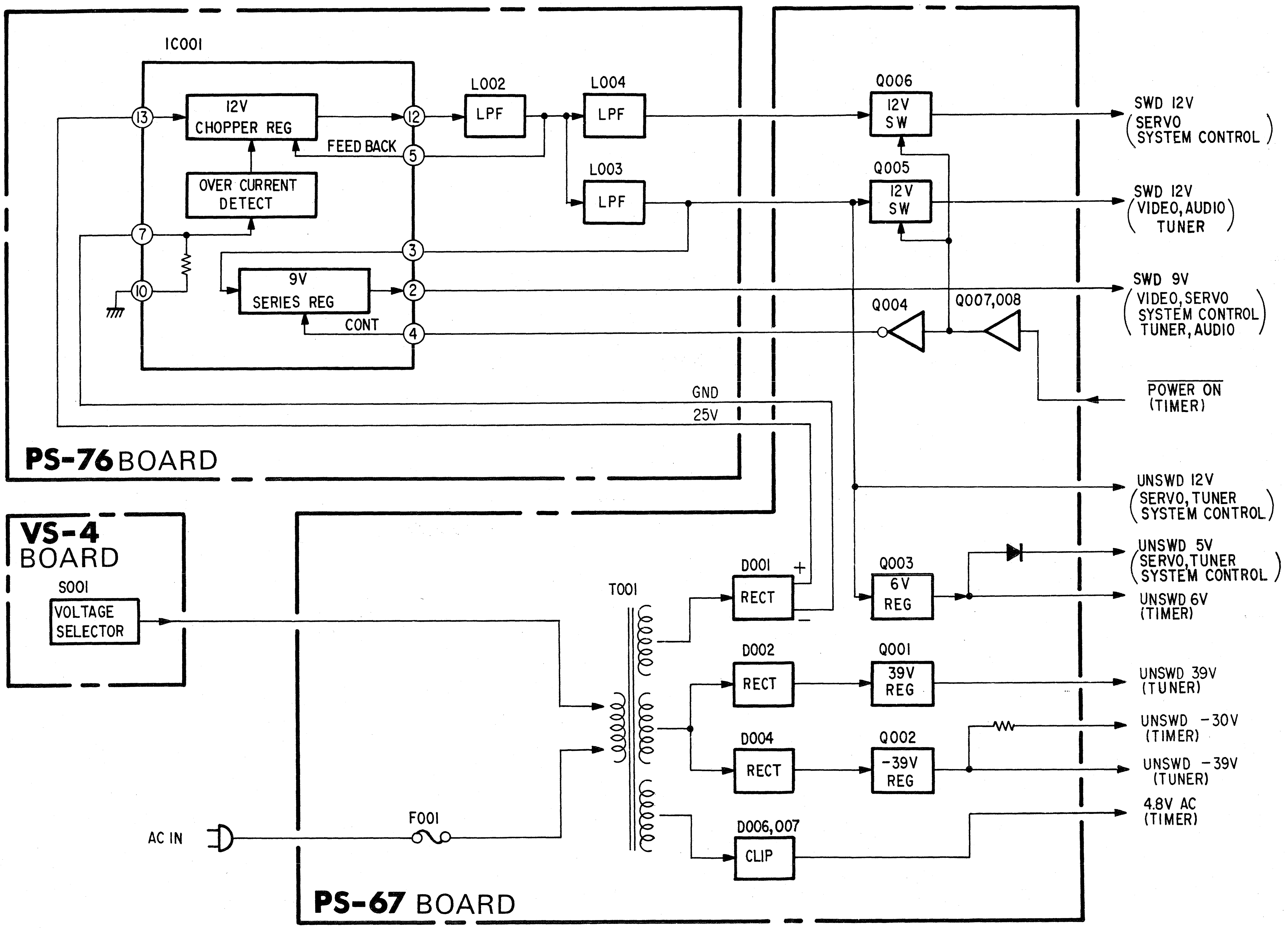
3-17. TIMER BLOCK DIAGRAM


(TUNER)
TU SEL
PR LOCK
PR UP
PR RST
PROG DATA P00-P03
PROG DATA P10-P11
(POWER)
PWR ON
(SERVO)
VD/CTL
(SYSTEM CONTROL)
SYS REQ
SYS RESET
SEND REQ
S CLOCK
S DATA ST
S DATA TS
IC002
POWER FAILURE DETECT
UNSWD 6V
Q004,005
RESET
Q001 -003
INITIAL RESET
TP001
TP003
TP004
X001
TC001
CLOCK
RV001
SYSTEM CLOCK
P00 IN
P03 IN
P10 IN
P11 IN
PWR FAIL
SYS REQ
PWR ON
SYS RESET
X 120
SEND REQ
KMI0
KMI1
KMI2
KMI3
KMO0
KMO1
KMO2
EX
X
RESET
TC
S CLOCK
S DATA ST
TX
TEX
TU SEL
PR LOCK
PR UP
PR RST
S1
S10
1G
9G
S DATA TS
IC001 TIMER
FLUORESCENT DISPLAY
S002 COUNTER /TIMER
S003 INPUT SELECT
S004 CLEAR RESET
S005 CLOCK SET
S006 TIMER CHECK
S007 TIMER SET
S008 −
S009 +
S010 NEXT
S011 TIMER REC
S012 QUICK TIMER
TM-57, 58 BOARD
(TIMER)

3-18-1. POWER BLOCK DIAGRAM (AEP, UK, EC MODEL)

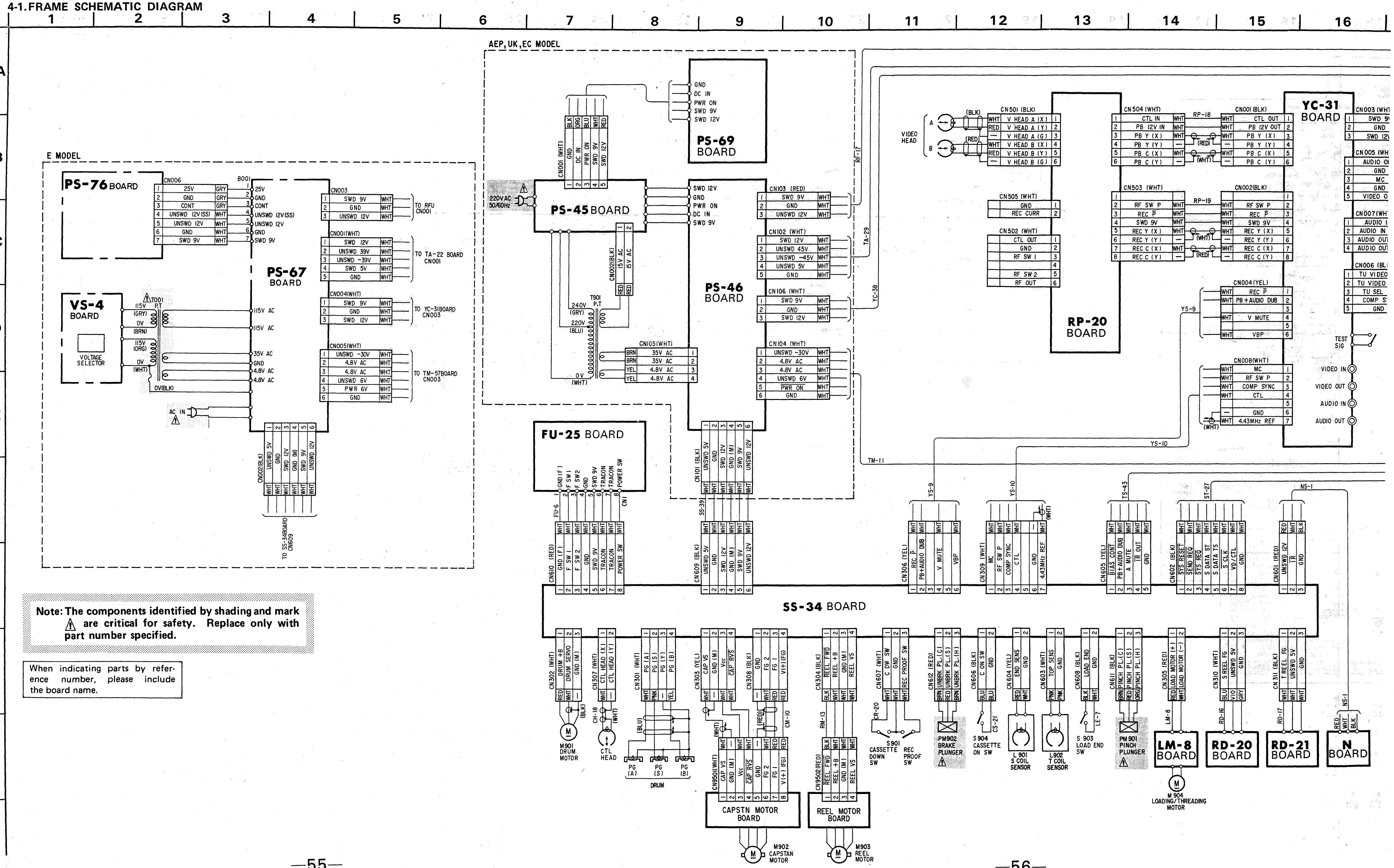

PS-45 BOARD
AC IN
F001
F002
D001
RECT
IC001
12V, 9V REG
IN
12V REG
12V OUT
POWER ON
9V REG
9V OUT
PS-69 BOARD
SWD 12V (VIDEO SERVO SYSTEM CONTROL TUNER, AUDIO)
SWD 9V (VIDEO, SERVO SYSTEM CONTROL TUNER, AUDIO)
PWR ON (TIMER)
Q102
Q101,104
12V REG
F101
Q103
6V REG
D101
RECT
D102
RECT
UNSWD 12V (SERVO, TUNER SYSTEM CONTROL)
UNSWD 5V (SERVO, TUNER SYSTEM CONTROL)
UNSWD 6V (TIMER)
UNSWD 45V (TUNER)
UNSWD -30V (TIMER)
UNSWD -45V (TUNER)
4.8V AC (TIMER)
PROTECT
Q105-107
UK MODEL ONLY
PS-46 BOARD
POWER TRANSFORMER

3-18-2. POWER BLOCK DIAGRAM (E MODEL)


IC001
13
12V
CHOPPER REG
12
FEED BACK
5
OVER CURRENT
DETECT
7
10
3
9V
SERIES REG
2
CONT
4
L002
LPF
L004
LPF
L003
LPF
GND
25V
PS-76 BOARD
Q006
12V
SW
Q005
12V
SW
Q004
Q007,008
SWD 12V
(SERVO
SYSTEM CONTROL)
SWD 12V
(VIDEO, AUDIO
TUNER)
SWD 9V
(VIDEO, SERVO
SYSTEM CONTROL
TUNER, AUDIO)
POWER ON
(TIMER)
UNSWD 12V
(SERVO, TUNER
SYSTEM CONTROL)
UNSWD 5V
(SERVO, TUNER
SYSTEM CONTROL)
UNSWD 6V
(TIMER)
UNSWD 39V
(TUNER)
UNSWD -30V
(TIMER)
UNSWD -39V
(TUNER)
4.8V AC
(TIMER)
VS-4
BOARD
S001
VOLTAGE
SELECTOR
T001
D001
+
RECT
−
Q003
6V
REG
D002
RECT
Q001
39V
REG
D004
RECT
Q002
-39V
REG
D006,007
CLIP
F001
AC IN
PS-67 BOARD

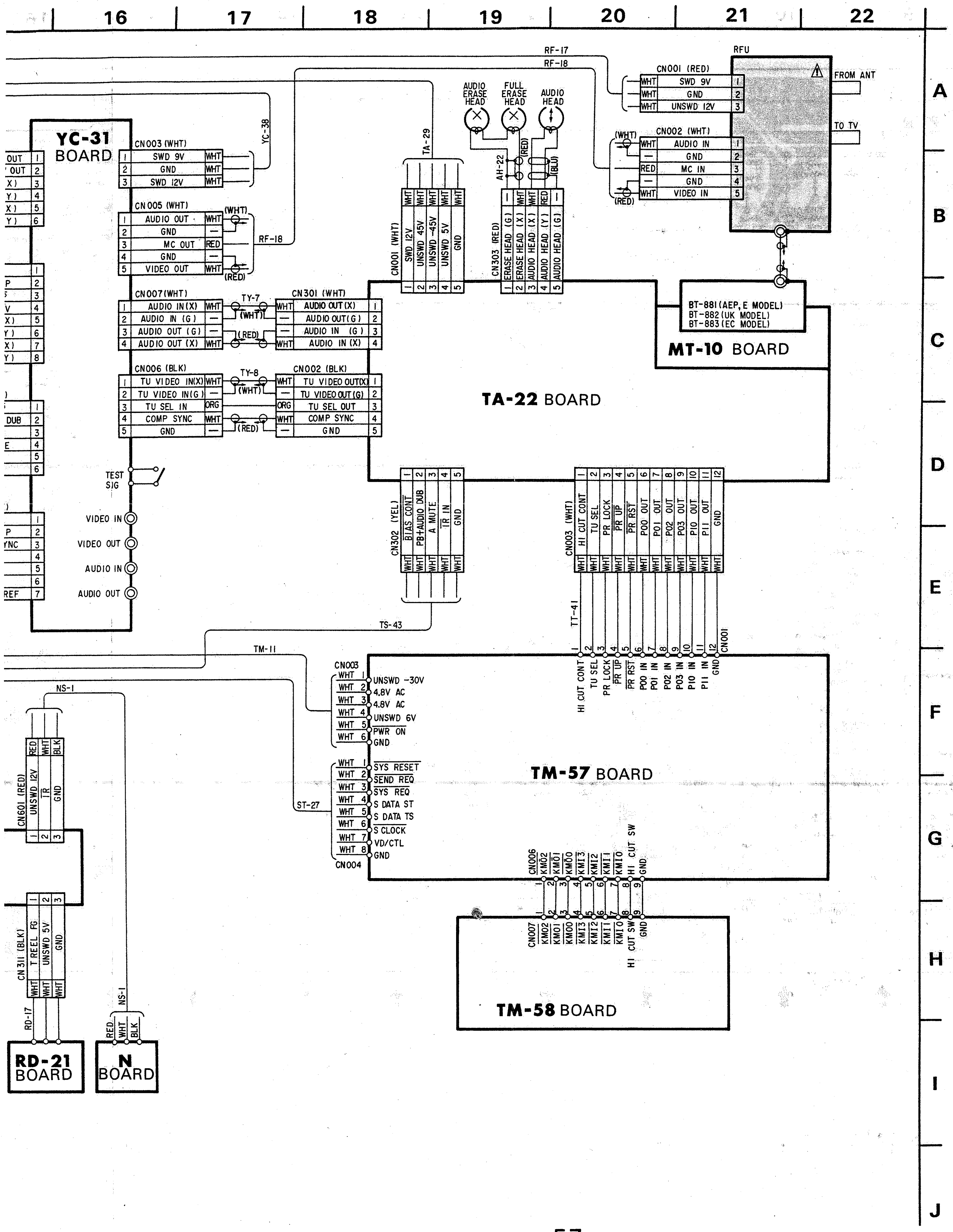
SECTION 4
SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

4-1. FRAME SCHEMATIC DIAGRAM

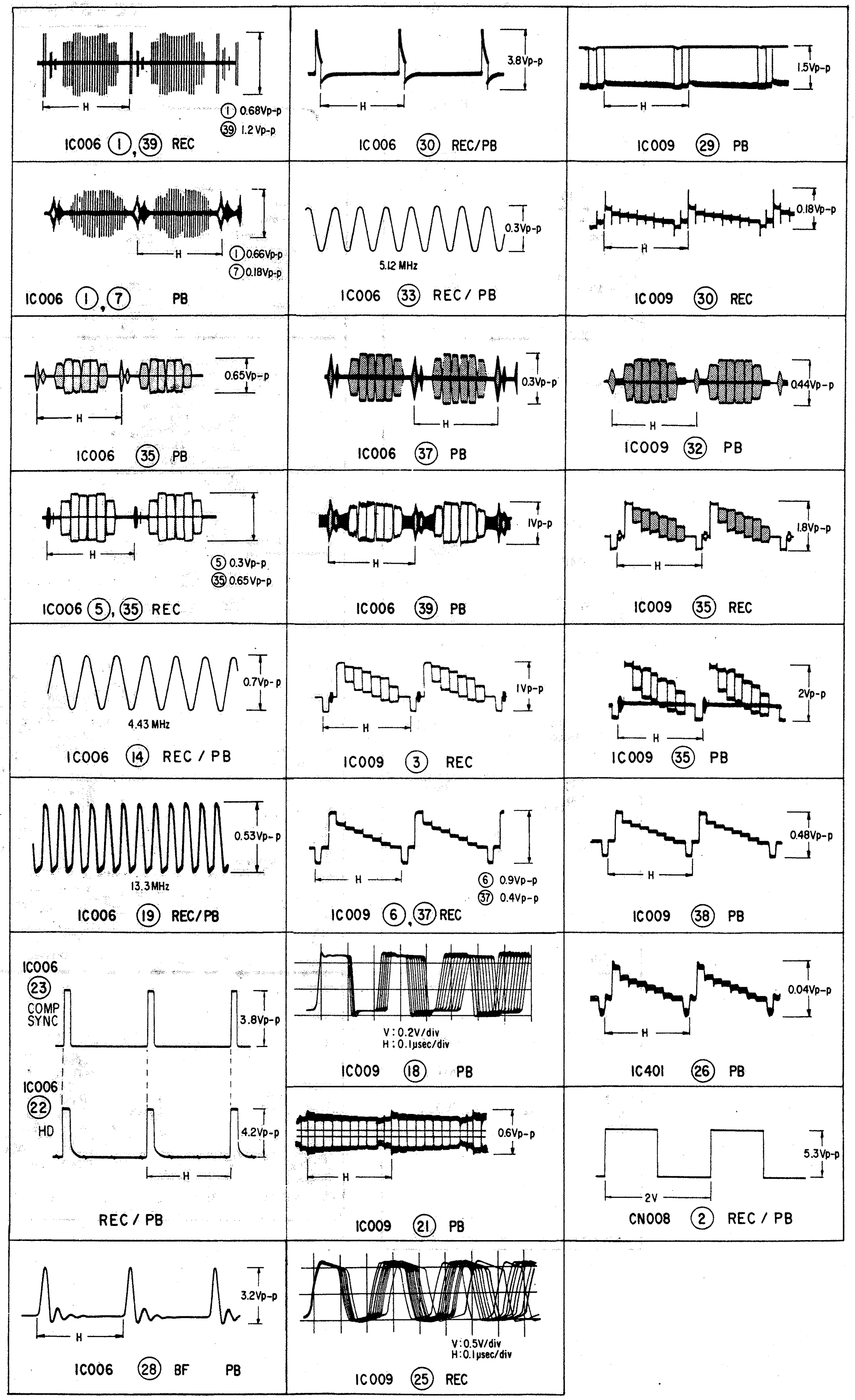

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
E MODEL
AEP, UK, EC MODEL
PS-76 BOARD
PS-67 BOARD
VS-4 BOARD
VOLTAGE SELECTOR
T001 P.T
AC IN
PS-45 BOARD
220V AC 50/60Hz
PS-69 BOARD
PS-46 BOARD
T901 P.T
FU-25 BOARD
TO RFU CN001
TO TA-22 BOARD CN001
TO YC-31BOARD CN003
TO TM-57BOARD CN003
TO SS-34BOARD CN609
RP-20 BOARD
YC-31 BOARD
VIDEO HEAD
TEST SIG
VIDEO IN
VIDEO OUT
AUDIO IN
AUDIO OUT
SS-34 BOARD
M901 DRUM MOTOR
CTL HEAD
PG (A)
PG (S)
PG (B)
DRUM
CAPSTN MOTOR BOARD
M902 CAPSTAN MOTOR
REEL MOTOR BOARD
M903 REEL MOTOR
S901 CASSETTE DOWN SW
REC PROOF SW
PM902 BRAKE PLUNGER
S904 CASSETTE ON SW
L901 S COIL SENSOR
L902 T COIL SENSOR
S903 LOAD END SW
PM901 PINCH PLUNGER
LM-8 BOARD
M904 LOADING/THREADING MOTOR
RD-20 BOARD
RD-21 BOARD
N BOARD

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

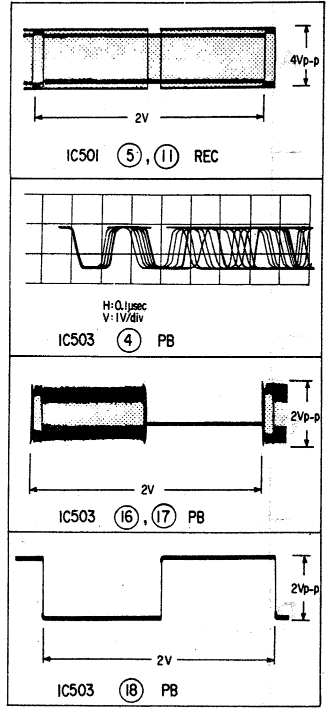
When indicating parts by reference number, please include the board name.


16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
YC-31 BOARD
CN003 (WHT)
SWD 9V
GND
SWD 12V
CN005 (WHT)
AUDIO OUT
GND
MC OUT
GND
VIDEO OUT
CN007 (WHT)
AUDIO IN (X)
AUDIO IN (G)
AUDIO OUT (G)
AUDIO OUT (X)
CN006 (BLK)
TU VIDEO IN (X)
TU VIDEO IN (G)
TU SEL IN
COMP SYNC
GND
TEST SIG
VIDEO IN
VIDEO OUT
AUDIO IN
AUDIO OUT
YC-38
RF-17
RF-18
TA-29
AH-22
TY-7
TY-8
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO HEAD
CN001 (WHT)
SWD 12V
UNSWD 45V
UNSWD -45V
UNSWD 5V
GND
CN303 (RED)
ERASE HEAD (G)
ERASE HEAD (X)
AUDIO HEAD (X)
AUDIO HEAD (Y)
AUDIO HEAD (G)
RFU
CN001 (RED)
SWD 9V
GND
UNSWD 12V
CN002 (WHT)
AUDIO IN
GND
MC IN
GND
VIDEO IN
FROM ANT
TO TV
BT-881 (AEP, E MODEL)
BT-882 (UK MODEL)
BT-883 (EC MODEL)
MT-10 BOARD
CN301 (WHT)
AUDIO OUT (X)
AUDIO OUT (G)
AUDIO IN (G)
AUDIO IN (X)
CN002 (BLK)
TU VIDEO OUT (X)
TU VIDEO OUT (G)
TU SEL OUT
COMP SYNC
GND
TA-22 BOARD
CN302 (YEL)
BIAS CONT
PB+AUDIO DUB
A MUTE
TR IN
GND
CN003 (WHT)
HI CUT CONT
TU SEL
PR LOCK
PR UP
PR RST
P00 OUT
P01 OUT
P02 OUT
P03 OUT
P10 OUT
P11 OUT
GND
TS-43
TT-41
TM-11
NS-1
ST-27
CN003
UNSWD -30V
4.8V AC
4.8V AC
UNSWD 6V
PWR ON
GND
CN004
SYS RESET
SEND REQ
SYS REQ
S DATA ST
S DATA TS
S CLOCK
VD/CTL
GND
CN001
HI CUT CONT
TU SEL
PR LOCK
PR UP
PR RST
P00 IN
P01 IN
P02 IN
P03 IN
P10 IN
P11 IN
GND
TM-57 BOARD
CN006
KM02
KM01
KM00
KM13
KM12
KM11
KM10
HI CUT SW
GND
CN007
TM-58 BOARD
CN601 (RED)
UNSWD 12V
TR
GND
CN311 (BLK)
T REEL FG
UNSWD 5V
GND
RD-17
RD-21 BOARD
N BOARD
WHT
RED
BLK
ORG
YEL
BLU

YC-31 BOARD (PAL/SECAM)



RP-20 BOARD



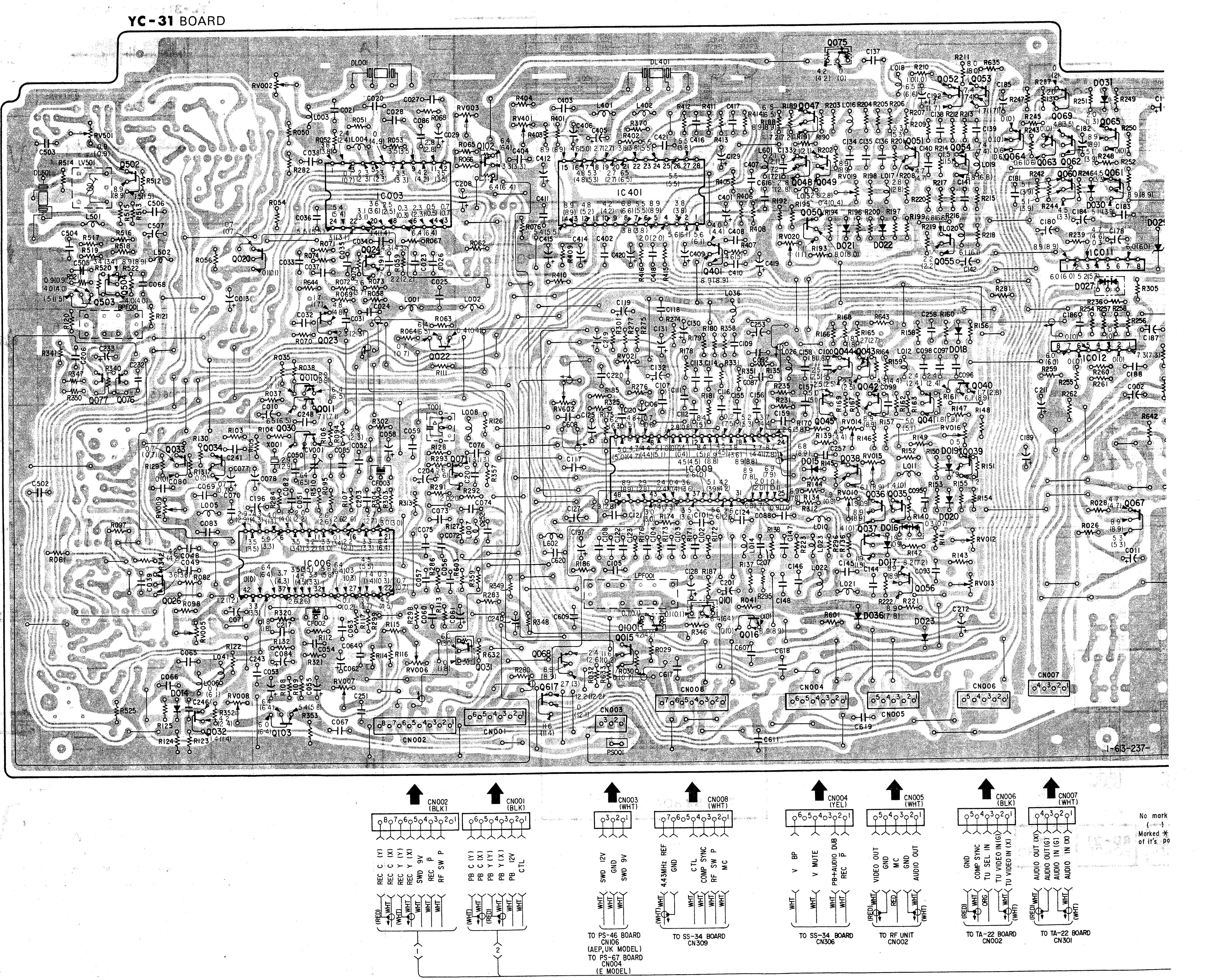
4-2. YC-31 (Y, CHROMA SIGNAL PROCESS), RP-20 (VIDEO SIGNAL, REC/PB AMP) PRINTED WIRING BOARDS

– Ref. No. YC-31 BOARD : 1000 series, RP-20 BOARD : 2000 series –

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J

Q , IC	D	ADJ
075		
		RV002
052,053 069	031	
047		RV003 RV401 RV501
064,065 063,062 051,054 102,048,049		
502 IC003 060,061 IC401	030	LV501 RV019
050	021,022	
055 020, 401 024 IC011	029	RV020
504 503,	027	
023		
022 IC012	018	
		RV021
044,043 076 077 010 045 040 011 042,041		RV602
		RV014
030		
033,034 IC009 039 071,038 619	019 015	RV016 CV001 RV015
035 036 067	020	RV009 RV010
037	016 017	RV012
026		RV013
056 101 100 016	036 023	RV005
031 015 068		RV006
		RV007
617 103 032	014	RV008
Q , IC	D	ADJ


YC-31 BOARD
1-613-237-
CN002 (BLK)
8 7 6 5 4 3 2 1
REC C (Y)
REC C (X)
REC Y (Y)
REC Y (X)
SWD 9V
REC P̄
RF SW P
(RED) WHT (WHT) WHT WHT WHT WHT
1
CN001 (BLK)
6 5 4 3 2 1
PB C (Y)
PB C (X)
PB Y (Y)
PB Y (X)
PB 12V
CTL
(WHT) WHT (RED) WHT WHT WHT
2
CN003 (WHT)
3 2 1
SWD 12V
GND
SWD 9V
WHT WHT WHT
TO PS-46 BOARD CN106 (AEP, UK MODEL)
TO PS-67 BOARD CN004 (E MODEL)
CN008 (WHT)
7 6 5 4 3 2 1
4.43MHz REF
GND
CTL
COMP SYNC
RF SW P
MC
(WHT) WHT WHT WHT WHT WHT
TO SS-34 BOARD CN309
CN004 (YEL)
6 5 4 3 2 1
V BP
V MUTE
PB+AUDIO DUB
REC P̄
WHT WHT WHT WHT
TO SS-34 BOARD CN306
CN005 (WHT)
5 4 3 2 1
VIDEO OUT
GND
MC
GND
AUDIO OUT
(RED) WHT RED WHT (WHT)
TO RF UNIT CN002
CN006 (BLK)
5 4 3 2 1
GND
COMP SYNC
TU SEL IN
TU VIDEO IN (G)
TU VIDEO IN (X)
(RED) WHT ORG WHT (WHT)
TO TA-22 BOARD CN002
CN007 (WHT)
4 3 2 1
AUDIO OUT (X)
AUDIO OUT (G)
AUDIO IN (G)
AUDIO IN (X)
(RED) WHT WHT (WHT)
TO TA-22 BOARD CN301

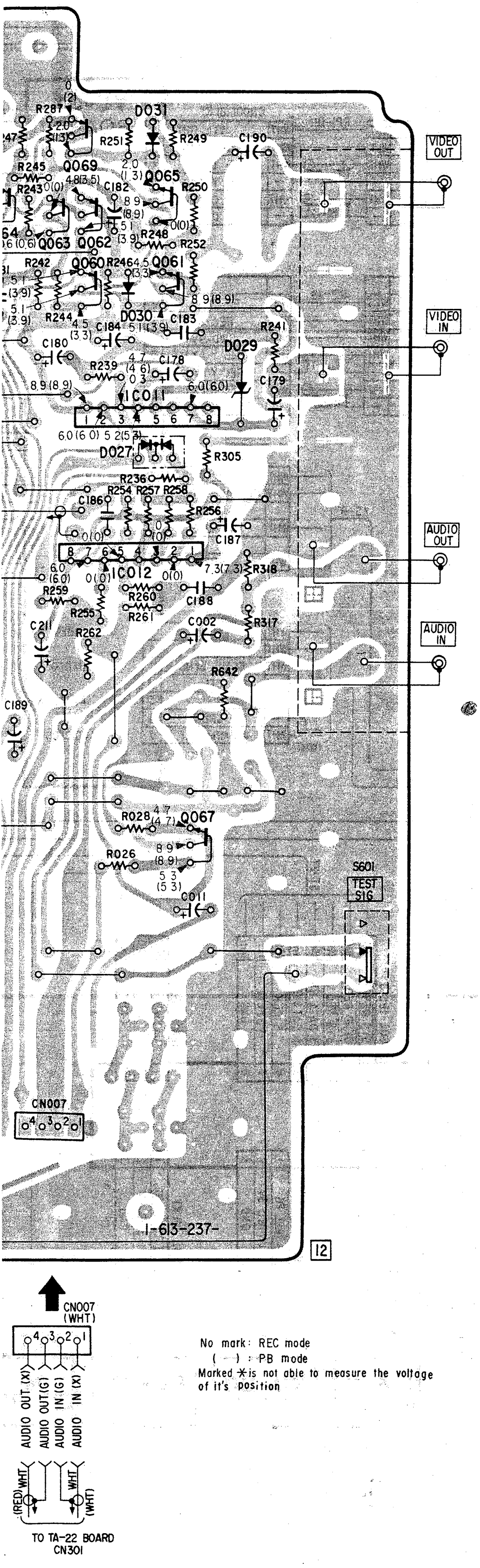
No mark
( )
Marked *
of it's po

Q IC	IC503				501	IC501	502	503	508	Q IC
ADJ		RV502	RV503	RV501						ADJ

Note:

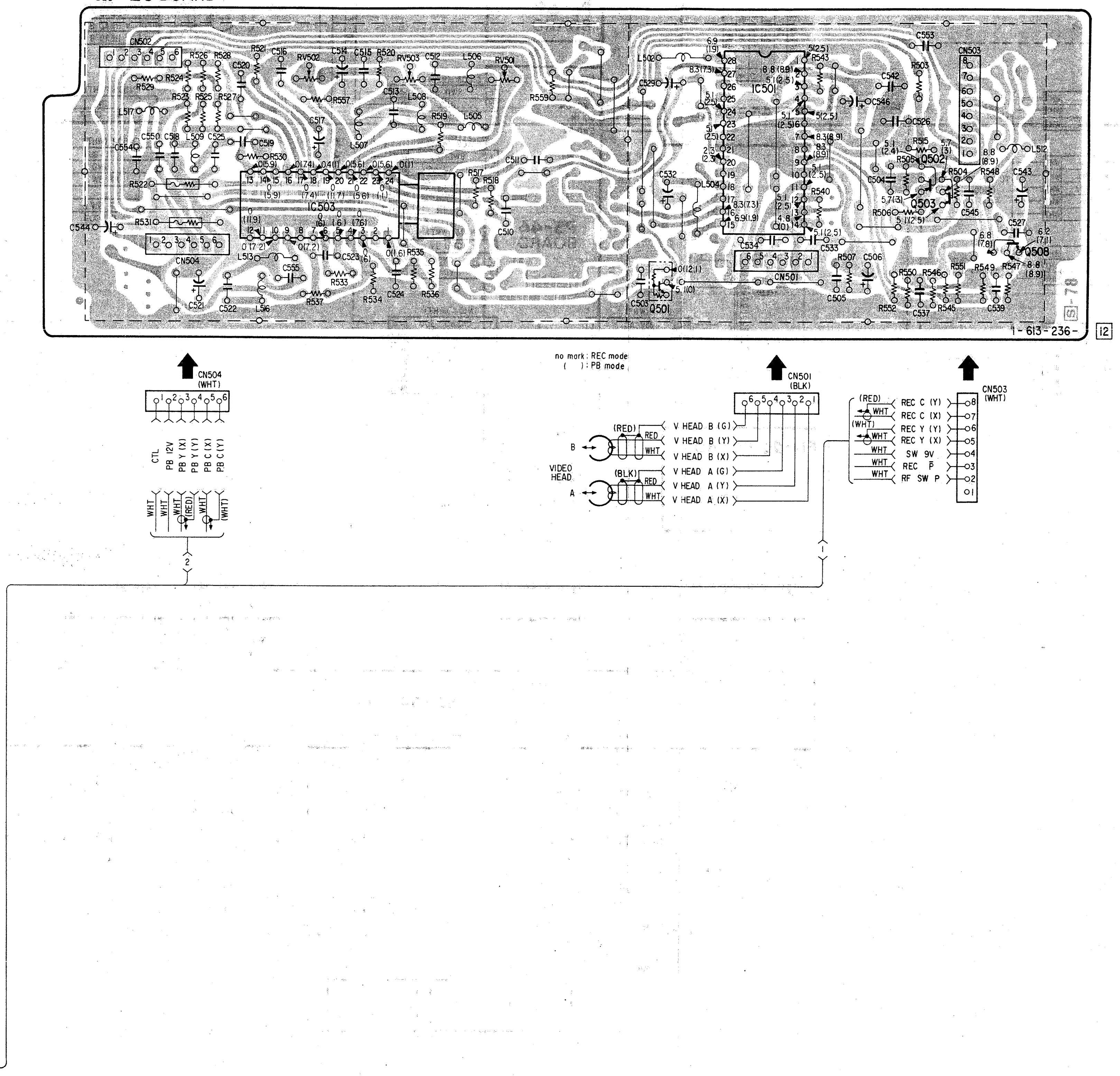
- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : soldering side
- ▨ : B+ pattern

When indicating parts by reference number, please include the board name.


VIDEO OUT
VIDEO IN
AUDIO OUT
AUDIO IN
S601 TEST SIG
IC011
IC012
Q060
Q061
Q062
Q063
Q065
Q067
Q069
D027
D029
D030
D031
CN007
1-613-237-
12
CN007 (WHT)
AUDIO OUT (X)
AUDIO OUT (G)
AUDIO IN (G)
AUDIO IN (X)
(RED) WHT
WHT (WHT)
TO TA-22 BOARD CN301

No mark : REC mode
( ) : PB mode
Marked ✳ is not able to measure the voltage of it's position

RP-20 BOARD


CN502
IC503
IC501
Q501
Q502
Q503
Q508
CN503
CN504
CN501
RV501
RV502
RV503
S-78
1-613-236-
12
no mark : REC mode
( ) : PB mode
CN504 (WHT)
CTL
PB 12V
PB Y (X)
PB Y (Y)
PB C (X)
PB C (Y)
WHT
(RED)
2
CN501 (BLK)
VIDEO HEAD
B
A
(RED)
(BLK)
RED
WHT
V HEAD B (G)
V HEAD B (Y)
V HEAD B (X)
V HEAD A (G)
V HEAD A (Y)
V HEAD A (X)
1
CN503 (WHT)
REC C (Y)
REC C (X)
REC Y (Y)
REC Y (X)
SW 9V
REC P̄
RF SW P

YC-31 (Y, CHROMA SIGNAL PROCESS), RP-20 (VIDEO SIGNAL, REC/PB AMP) SCHEMATIC DIAGRAM

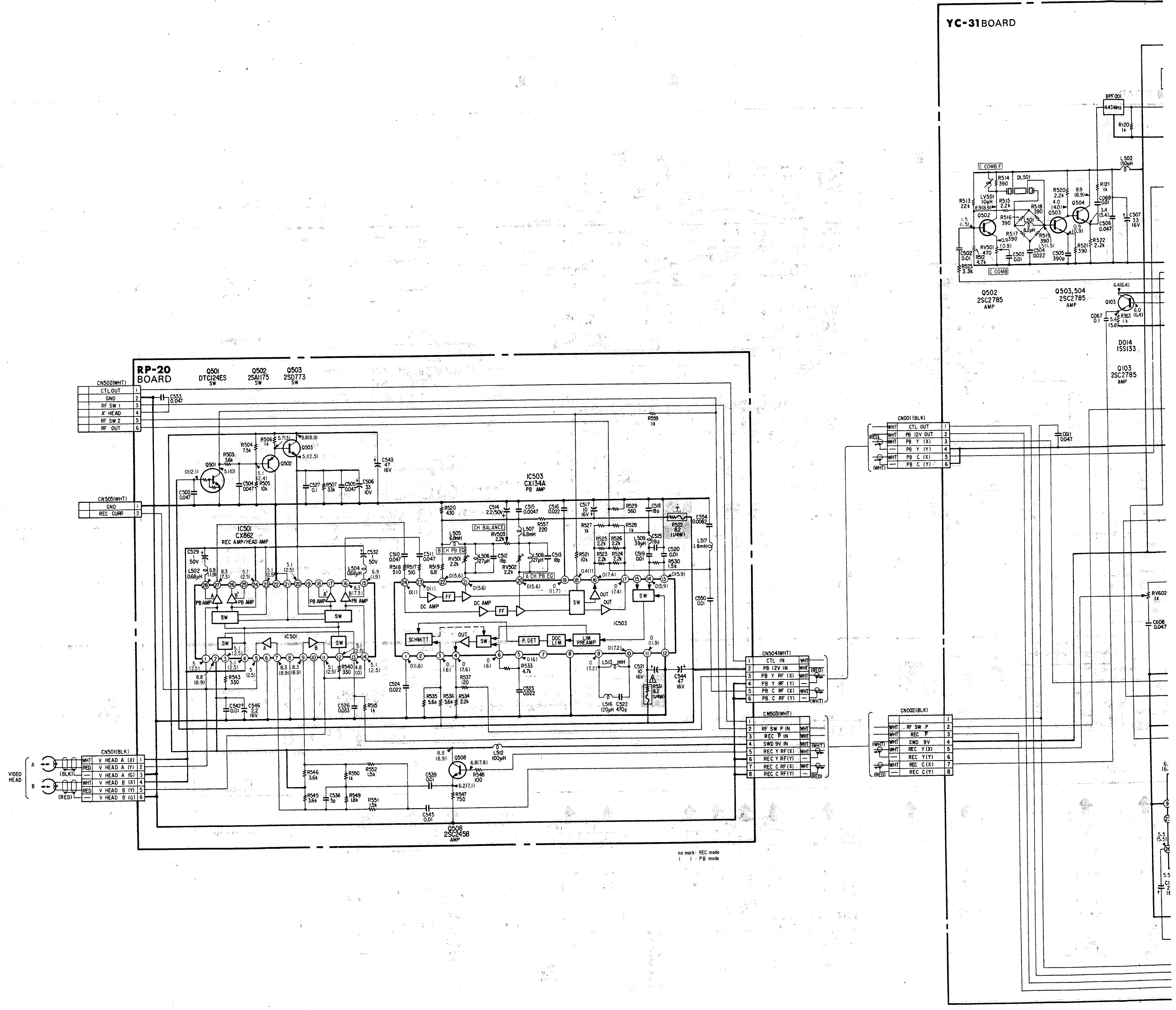
– Ref. No. YC-31 BOARD : 1000 series, RP-20 BOARD : 2000 series –

Note:

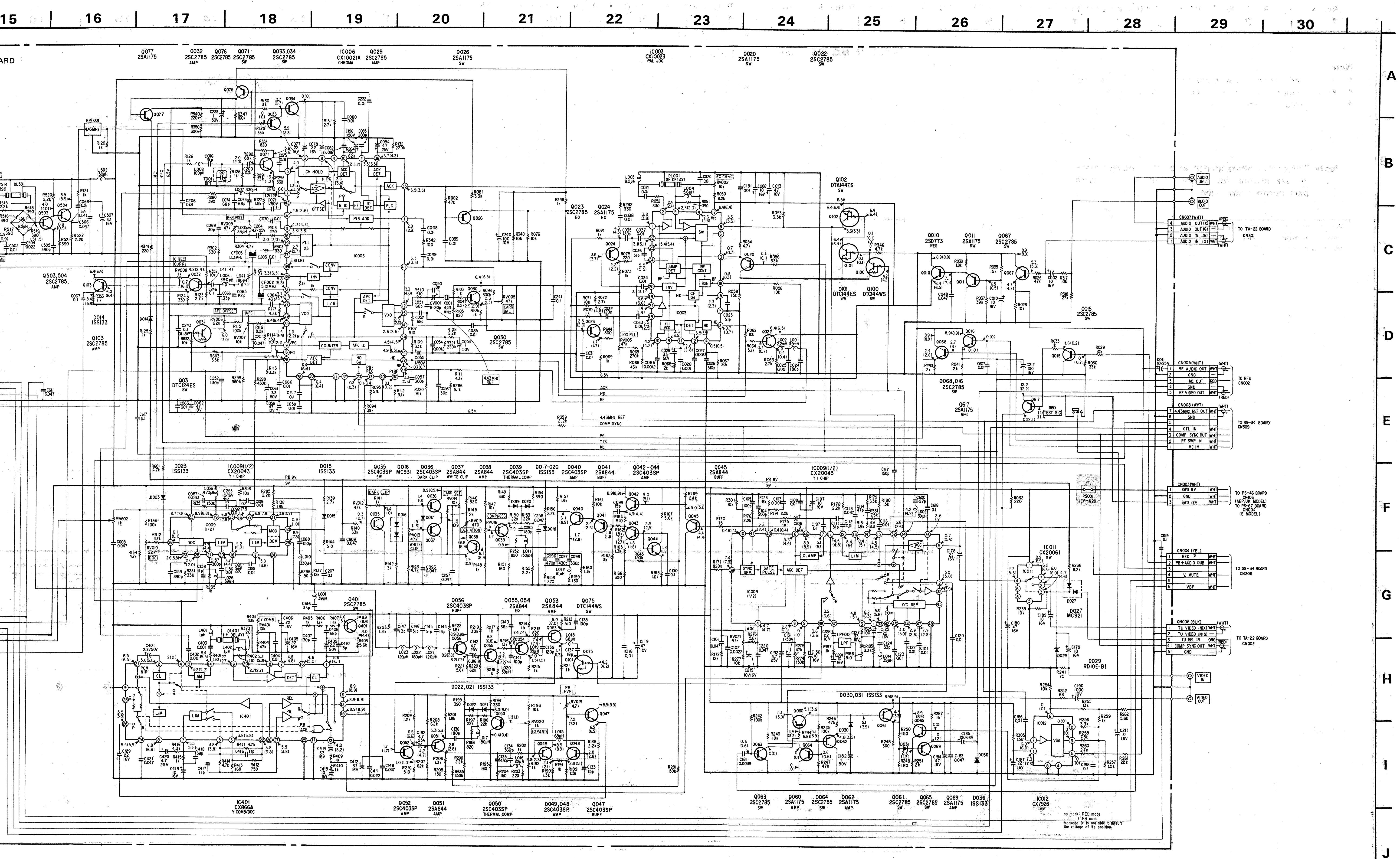
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- —— : B+ bus.
- – – – : B– bus.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.


RP-20 BOARD
Q501 DTC124ES SW
Q502 2SA1175 SW
Q503 2SD773 SW
CN502(WHT)
CTL OUT
GND
RF SW 1
A' HEAD
RF SW 2
RF OUT
C553 0.047
CN505(WHT)
GND
REC CURR
IC501 CX862 REC AMP/HEAD AMP
IC503 CX134A PB AMP
PB AMP
SW
DC AMP
FF
SCHMITT
P. DET
DOC LIM
LIM PREAMP
CH BALANCE
B CH PB EQ
A CH PB EQ
CN501(BLK)
V HEAD A (X)
V HEAD A (Y)
V HEAD A (G)
V HEAD B (X)
V HEAD B (Y)
V HEAD B (G)
VIDEO HEAD
A
B
Q508 2SC2458 AMP
CN504(WHT)
CTL IN
PB 12V IN
PB Y RF (X)
PB Y RF (Y)
PB C RF (X)
PB C RF (Y)
CN503(WHT)
RF SW P IN
REC P IN
SWD 9V IN
REC Y RF(X)
REC Y RF(Y)
REC C RF(X)
REC C RF(Y)
YC-31 BOARD
CN001(BLK)
CTL OUT
PB 12V OUT
PB Y (X)
PB Y (Y)
PB C (X)
PB C (Y)
CN002(BLK)
RF SW P
REC P
SWD 9V
REC Y(X)
REC Y(Y)
REC C(X)
REC C(Y)
Q502 2SC2785 AMP
Q503,504 2SC2785 AMP
D014 1SS133
Q103 2SC2785 AMP
BPF001 4.43MHz
C COMB.F
DL501
no mark: REC mode
( ) : PB mode

VIDEO VIDEO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A
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E
F
G
H
I
J
ARD
Q077 2SA1175
Q032 2SC2785 AMP
Q076 2SC2785
Q071 2SC2785 SW
Q033,034 2SC2785 SW
IC006 CX10021A CHROMA
Q029 2SC2785 AMP
Q026 2SA1175 SW
IC003 CX10023 PAL JOG
Q020 2SA1175 SW
Q022 2SC2785 SW
Q102 DTA144ES SW
Q101 DTC144ES SW
Q100 DTC144WS SW
Q010 2SD773 REG
Q011 2SA1175 SW
Q067 2SC2785 SW
Q015 2SC2785 SW
Q068,016 2SC2785 SW
Q617 2SA1175 REG
S601 TEST SIG
Q023 2SC2785 EQ
Q024 2SA1175 EQ
Q503,504 2SC2785 AMP
D014 1SS133
Q103 2SC2785 AMP
Q031 DTC124ES SW
Q030 2SC2785 SW
BPF001 4.43MHz
DL001 1H DELAY
CH HOLD
ACC DET
ACK DET
ACK
P.C
PLL
CONV
INV
APC DET
AFC DET
APC ID
COUNTER
VXO
VCO
P-BURST
AFC OFFSET
C REC CURR
4.43MHz REF
JUMP DET
JOG PLL
EX CH-C
4.43MHz REF
COMP SYNC
PG
Y+C
MC
6.5V
R601 4.7k
D023 1SS133
IC009(1/2) CX20043 Y I CHIP
D015 1SS133
Q035 2SC403SP SW
D016 MC931
Q036 2SC403SP DARK CLIP
Q037 2SA844 WHITE CLIP
Q038 2SA844 AMP
Q039 2SC403SP THERMAL COMP
D017-020 1SS133
Q040 2SC403SP AMP
Q041 2SA844 BUFF
Q042-044 2SC403SP AMP
Q045 2SA844 BUFF
IC009(1/2) CX20043 Y I CHIP
PB 9V
9V
DARK CLIP
CARR SET
WHITE CLIP
COMPRESS
DEVIATION
DOC
LIM
DEM
MOD
SYNC SEP
GATE PULSE
AGC DET
CLAMP
AGC
Y/C SEP
LPF
PS001 ICP-N20
IC011 CX20061 SW
D027 MC921
D029 RD10E-B1
Q401 2SC2785 SW
Q056 2SC403SP BUFF
Q055,054 2SA844 EQ
Q053 2SA844 AMP
Q075 DTC144WS SW
DL401 1H DELAY
Y COMB
PCM NIR
CL
AM
DET
IC401
REC
PB
D022,021 1SS133
PB LEVEL
EXPAND
D030,031 1SS133
VSA
IC401 CX866A Y COMB/DOC
Q052 2SC403SP AMP
Q051 2SA844 AMP
Q050 2SC403SP THERMAL COMP
Q049,048 2SC403SP AMP
Q047 2SC403SP BUFF
Q063 2SC2785 SW
Q060 2SA1175 AMP
Q064 2SC2785 SW
Q062 2SA1175 AMP
Q061 2SC2785 SW
Q065 2SC2785 SW
Q069 2SA1175 AMP
D036 1SS133
IC012 CX7926 TSG
CTL
AUDIO IN
AUDIO OUT
CN007 (WHT)
4 AUDIO OUT (X) WHT
3 AUDIO OUT (G) —
2 AUDIO IN (G) —
1 AUDIO IN (X) WHT
(RED)
(WHT)
TO TA-22 BOARD CN301
C011 10/25V
CN005 (WHT)
1 RF AUDIO OUT WHT
2 GND —
3 MC OUT RED
4 GND —
5 RF VIDEO OUT WHT
TO RFU CN002
CN008 (WHT)
7 4,43MHz REF OUT WHT
6 GND —
5
4 CTL IN WHT
3 COMP SYNC OUT WHT
2 RF SWP IN WHT
1 MC IN WHT
TO SS-34 BOARD CN309
CN003 (WHT)
1 SWD 9V WHT
2 GND WHT
3 SWD 12V WHT
TO PS-46 BOARD CN106 (AEP, UK MODEL)
TO PS-67 BOARD CN004 (E MODEL)
C619 0.1
CN004 (YEL)
1 REC P̄ WHT
2 PB+AUDIO DUB WHT
3
4 V. MUTE WHT
5
6 VBP WHT
TO SS-34 BOARD CN306
CN006 (BLK)
1 TU VIDEO IN(X) WHT
2 TU VIDEO IN(G) —
3 TU SEL IN ORG
4 COMP SYNC OUT WHT
5 GND —
TO TA-22 BOARD CN002
VIDEO IN
VIDEO OUT

no mark : REC mode
( ) : PB mode
Markede ✱ is not able to mesure the voltage of it's position

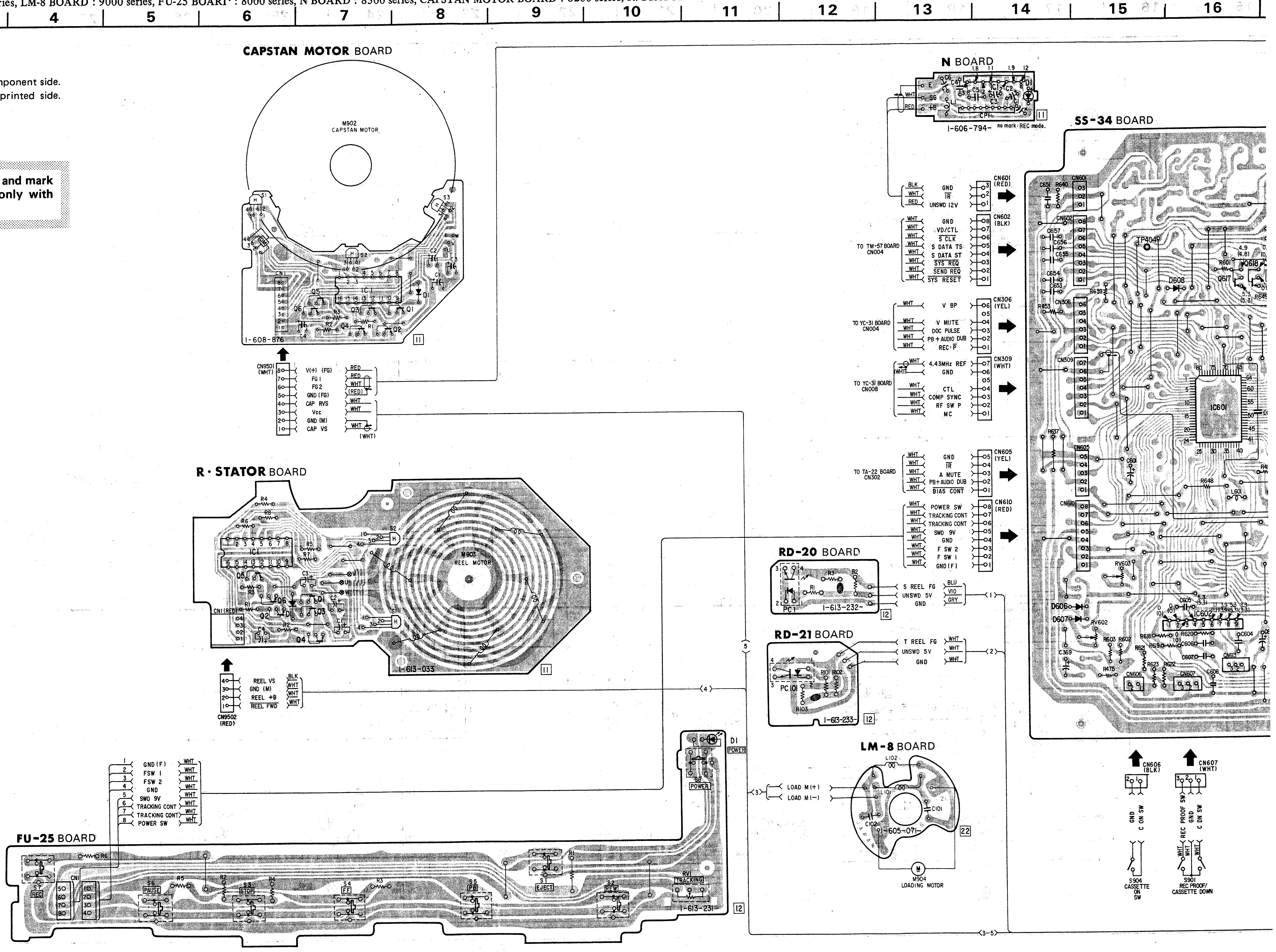
4-3. SS-34 (SYSTEM CONTROL, SERVO), RD-20 (ROTATION DETECTOR), RD-21 (ROTATION DETECTOR), LM-8 (LOADING MOTOR), FU-25 (FUNCTION, TRACKING CONTROL), N (INFRARED AMP), CAPSTAN MOTOR (CAPSTAN MOTOR), R. ST

– Ref. No. SS-34, RD-20, RD-21 BOARD : 4000 series, LM-8 BOARD : 9000 series, FU-25 BOARD : 8000 series, N BOARD : 8300 series, CAPSTAN MOTOR BOARD : 8200 series, R. STATOR BOARD : 8100 series –

Note:
- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : soldering side
- ▒ : B+ pattern
- ░ : component side

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.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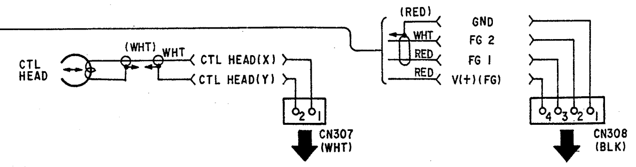
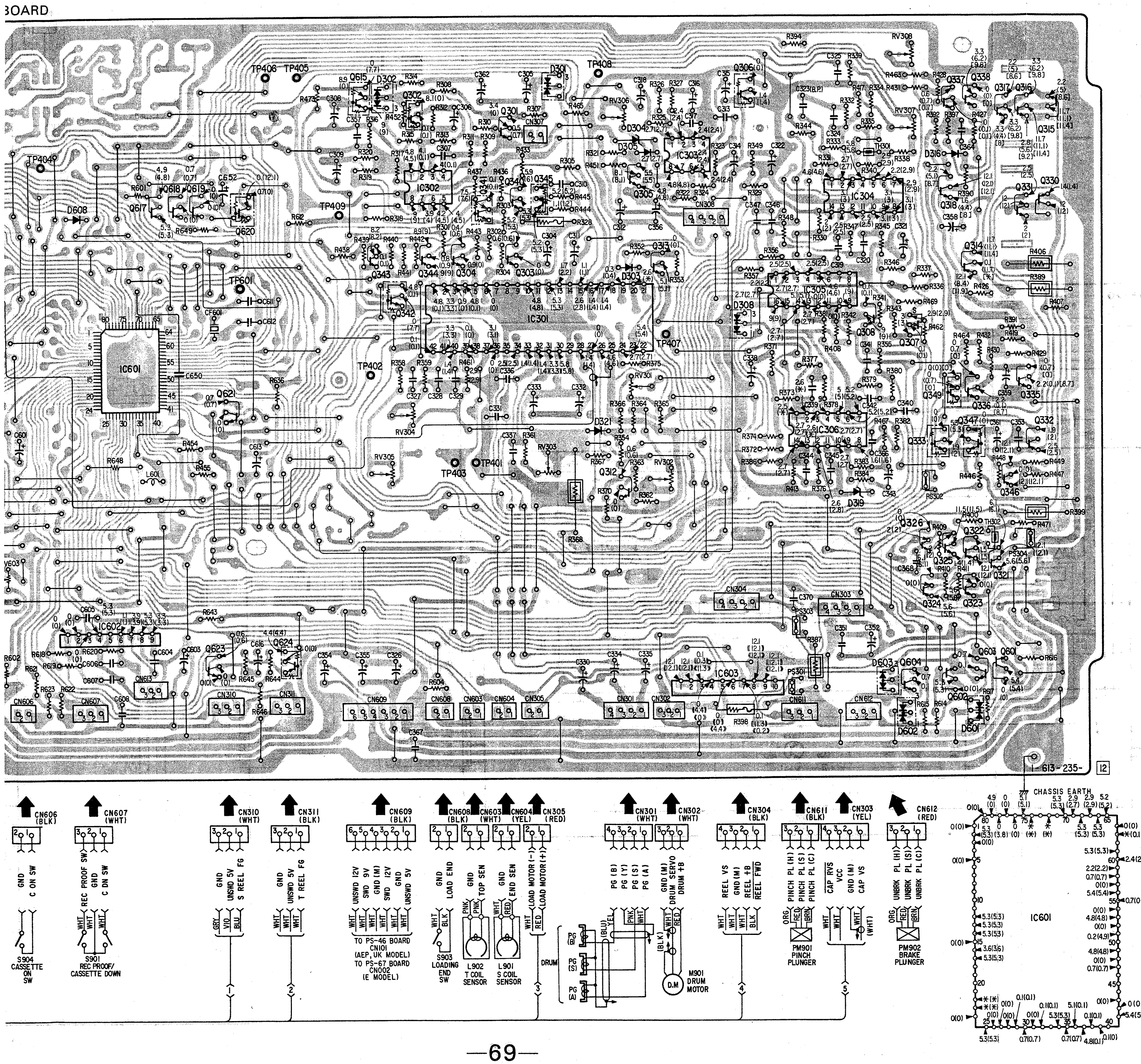
15
16
A
B
C
D
E
F
G
H
I
J
CAPSTAN MOTOR BOARD
M902
CAPSTAN MOTOR
1-608-876
CN9501
(WHT)
V(+) (FG)
FG 1
FG 2
GND (FG)
CAP RVS
Vcc
GND (M)
CAP VS
RED
RED
WHT
(RED)
WHT
WHT
WHT
(WHT)
R · STATOR BOARD
M903
REEL MOTOR
1-613-033
CN1 (RED)
CN9502
(RED)
REEL VS
GND (M)
REEL +B
REEL FWD
BLK
WHT
WHT
WHT
FU-25 BOARD
GND (F)
FSW 1
FSW 2
GND
SWD 9V
TRACKING CONT
TRACKING CONT
POWER SW
S7 REC
S6 PAUSE
S3 STOP
S4 FF
S5 PB
S1 EJECT
S2 REW
RV1 TRACKING
S8 POWER
D1 POWER
1-613-231
N BOARD
1-606-794-
no mark : REC mode.
SS-34 BOARD
CN601 (RED)
GND
IR
UNSWD 12V
BLK
WHT
RED
TO TM-57 BOARD CN004
CN602 (BLK)
GND
VD/CTL
S CLK
S DATA TS
S DATA ST
SYS REQ
SEND REQ
SYS RESET
TO YC-31 BOARD CN004
CN306 (YEL)
V BP
V MUTE
DOC PULSE
PB + AUDIO DUB
REC · P
TO YC-31 BOARD CN008
CN309 (WHT)
4.43MHz REF
GND
CTL
COMP SYNC
RF SW P
MC
TO TA-22 BOARD CN302
CN605 (YEL)
GND
IR
A MUTE
PB + AUDIO DUB
BIAS CONT
CN610 (RED)
POWER SW
TRACKING CONT
TRACKING CONT
SWD 9V
GND
F SW 2
F SW 1
GND (F)
IC601
RD-20 BOARD
PC1
1-613-232-
S REEL FG
UNSWD 5V
GND
BLU
VIO
GRY
RD-21 BOARD
PC101
1-613-233-
T REEL FG
UNSWD 5V
GND
LM-8 BOARD
LOAD M (+)
LOAD M (−)
1-605-071-
M904
LOADING MOTOR
CN606 (BLK)
GND
C ON SW
S904
CASSETTE ON SW
CN607 (WHT)
REC PROOF SW
GND
C DN SW
S901
REC PROOF/
CASSETTE DOWN

PSTAN MOTOR), R. STATOR (REEL MOTOR) PRINTED WIRING BOARDS


CTL HEAD
(WHT)
WHT
CTL HEAD(X)
CTL HEAD(Y)
CN307 (WHT)
(RED)
WHT
RED
RED
GND
FG 2
FG 1
V(+)(FG)
CN308 (BLK)

no mark : REC ..
( ) : PB mode
⟨ ⟩ : CUE mode
[ ] : FF/REW mode
(( )) : LOADING/THREADING mode
« » : EJECT mode
[[ ]] : REV mode
Marked ✳ is not able to measure the voltage of it's position.


5
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24
3OARD
IC601
IC301
IC302
IC303
IC304
IC305
IC306
IC602
IC603
TP401
TP402
TP403
TP404
TP405
TP406
TP407
TP408
TP409
TP601
RV301
RV302
RV303
RV304
RV305
RV306
RV307
RV308
613-235-
12
CN606 (BLK)
GND
C ON SW
S904 CASSETTE ON SW
CN607 (WHT)
REC PROOF SW
GND
C DN SW
S901 REC PROOF/ CASSETTE DOWN
CN310 (WHT)
GND
UNSWD 5V
S REEL FG
GRY
VIO
BLU
CN311 (BLK)
GND
UNSWD 5V
T REEL FG
CN609 (BLK)
UNSWD 12V
SWD 9V
GND (M)
SWD 12V
GND
UNSWD 5V
TO PS-46 BOARD CN101 (AEP, UK MODEL)
TO PS-67 BOARD CN002 (E MODEL)
CN608 (BLK)
GND
LOAD END
S903 LOADING END SW
CN603 (WHT)
GND
TOP SEN
L902 T COIL SENSOR
CN604 (YEL)
GND
END SEN
L901 S COIL SENSOR
CN305 (RED)
LOAD MOTOR (−)
LOAD MOTOR (+)
DRUM
PG (B)
PG (S)
PG (A)
CN301 (WHT)
PG (B)
PG (Y)
PG (S)
PG (A)
CN302 (WHT)
GND (M)
DRUM SERVO
DRUM +B
M901 DRUM MOTOR
D.M
CN304 (BLK)
REEL VS
GND (M)
REEL +B
REEL FWD
CN611 (BLK)
PINCH PL (H)
PINCH PL (S)
PINCH PL (C)
PM901 PINCH PLUNGER
CN303 (YEL)
CAP RVS
VCC
GND (M)
CAP VS
CN612 (RED)
UNBRK PL (H)
UNBRK PL (S)
UNBRK PL (C)
PM902 BRAKE PLUNGER
CHASSIS EARTH
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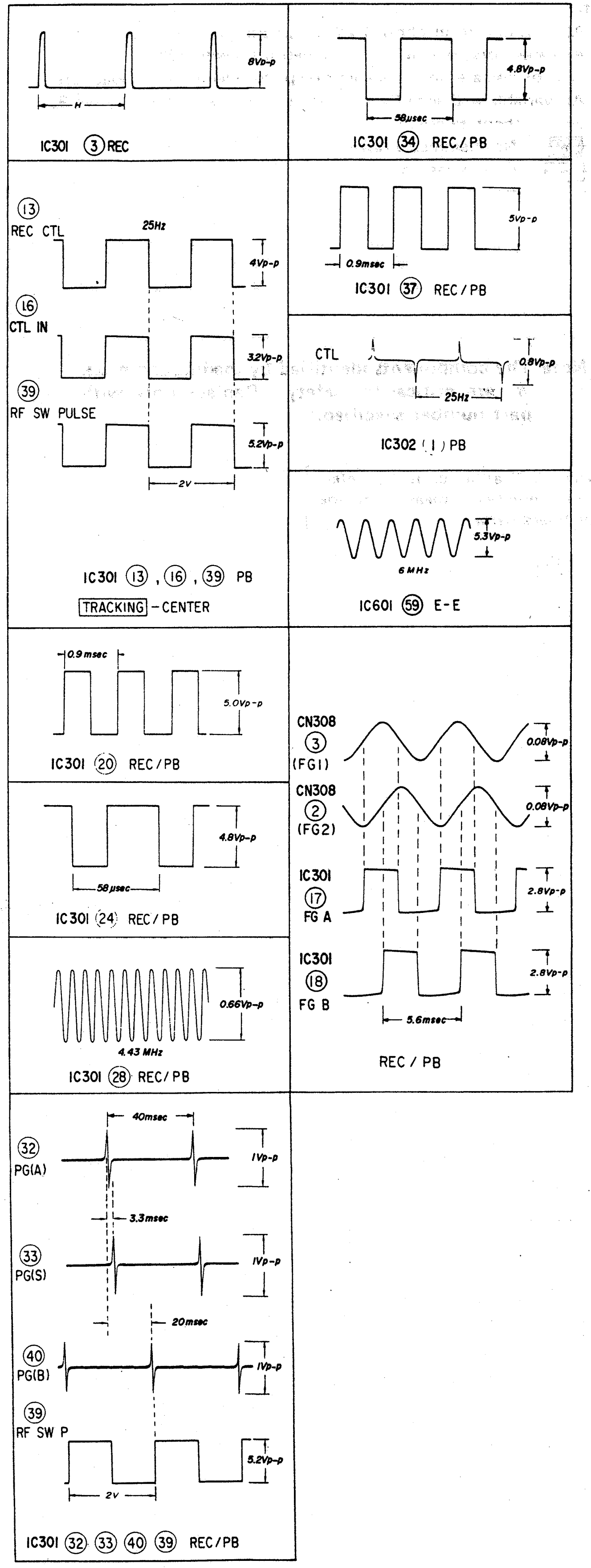
Q, IC	D	ADJ,TP
		RV308 TP408 TP406,TP405
306 615 337,338 317,316 302,301,315	301 302	RV306 RV307
IC303	304,316 305	TP404
305 IC302,340,345 619,620,IC304 617,618,318,330 341,331		TP409
313 304,303 343,344 314 342	608	
IC305	303	TP601
308,307 IC301	308	
		TP407
IC601 335 349,336		TP402 RV301
621		RV304
IC306 333,332 347	321	TP401 TP403 RV303 RV305 RV302
346 312		
	319	
326,322 325 321		
323 324	606 607	
IC602		
623,624 603,601 604,602 IC603	603	
	601 602	
Q, IC	D	ADJ,TP

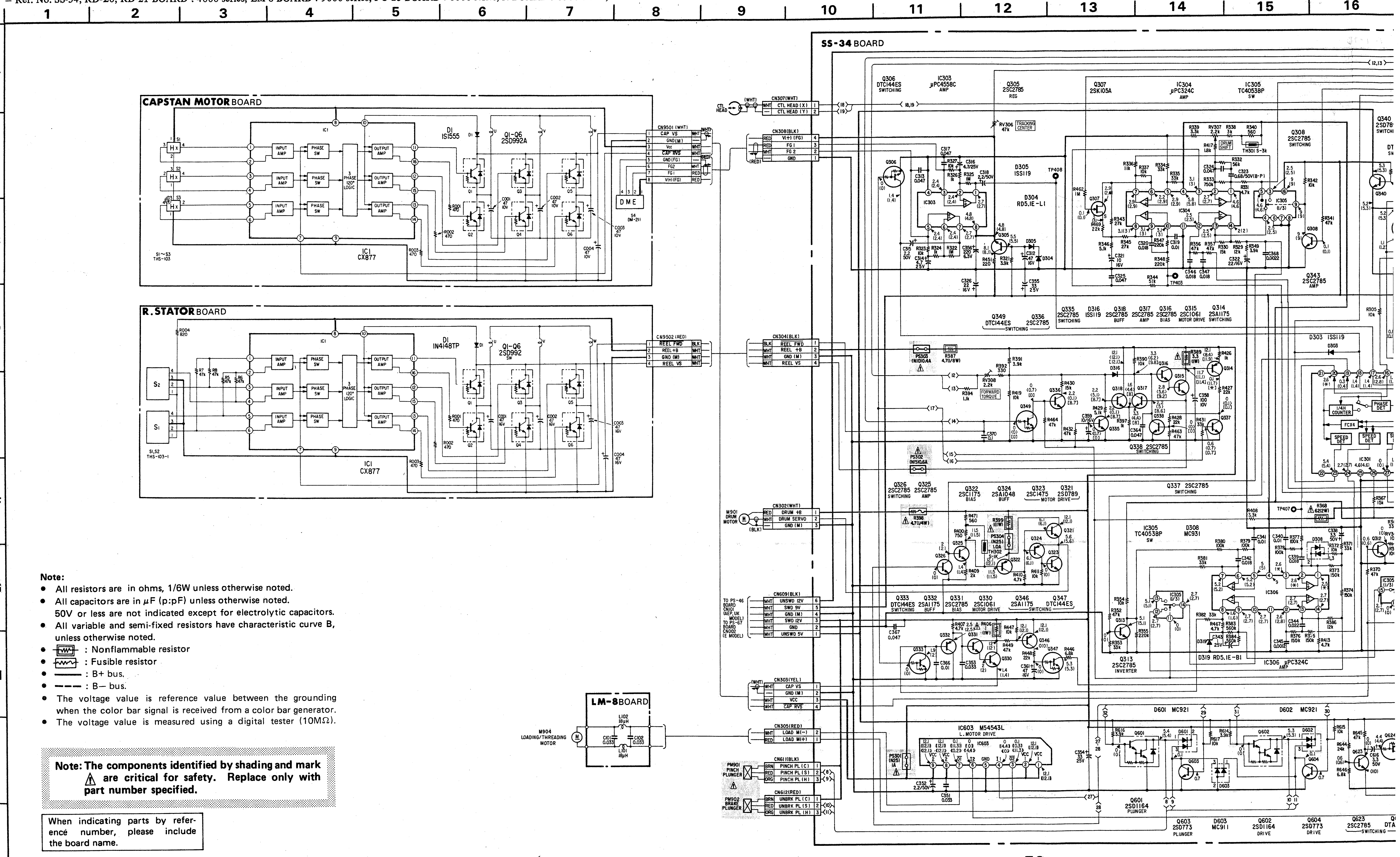
SS-34 BOARD (SERVO/SYSTEM CONTROL)



SERVO/SYSTEM CONTROL SERVO/SYSTEM CONTROL

SS-34 (SYSTEM CONTROL, SERVO), RD-20 (ROTATION DETECTOR), RD-21 (ROTATION DETECTOR), LM-8 (LOADING MOTOR), FU-25 (FUNCTION, TRACKING CONTROL), N (INFRARED AMP), CAPSTAN MOTOR (CAPSTAN MOTOR), R. STATO

– Ref. No. SS-34, RD-20, RD-21 BOARD : 4000 series, LM-8 BOARD : 9000 series, FU-25 BOARD : 8000 series, N BOARD : 8300 series, CAPSTAN MOTOR BOARD : 8200 series, R. STATOR BOARD : 8100 series –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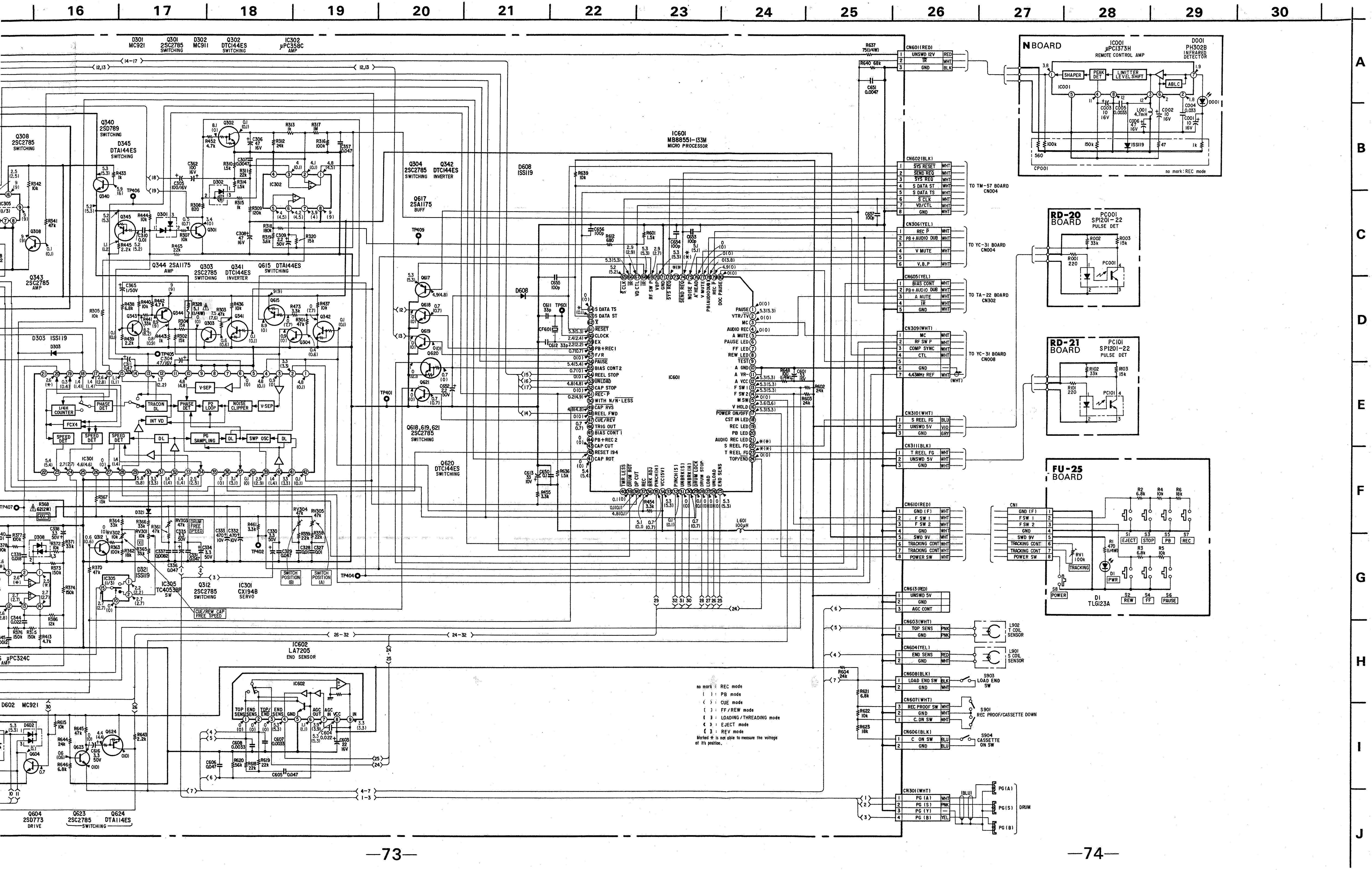
G
H
I
J
CAPSTAN MOTOR BOARD
R. STATOR BOARD
SS-34 BOARD
LM-8 BOARD
IC1 CX877
D1 1S1555
Q1-Q6 2SD992A
D1 1N4148TP
Q1-Q6 2SD992
INPUT AMP
PHASE SW
3 PHASE 120° LOGIC
OUTPUT AMP
S1~S3 THS-103
S1,S2 THS-103-1
DME
CN9501 (WHT)
CN9502 (RED)
CN307 (WHT)
CN308 (BLK)
CN304 (BLK)
CN302 (WHT)
CN609 (BLK)
CN303 (YEL)
CN305 (RED)
CN611 (BLK)
CN612 (RED)
CTL HEAD
M901 DRUM MOTOR
M904 LOADING/THREADING MOTOR
PM901 PINCH PLUNGER
PM902 BRAKE PLUNGER
TO PS-46 BOARD CN101 (AEP, UK MODEL) TO PS-67 BOARD CN002 (E MODEL)
Q306 DTC144ES SWITCHING
IC303 μPC4558C AMP
Q305 2SC2785 REG
Q307 2SK105A
IC304 μPC324C AMP
IC305 TC4053BP SW
Q308 2SC2785 SWITCHING
Q340 2SD76
D305 1SS119
D304 RD5.1E-L1
TP408
TP403
Q343 2SC2785 AMP
Q349 DTC144ES
Q336 2SC2785 SWITCHING
Q335 2SC2785 SWITCHING
D316 1SS119
Q318 2SC2785 BUFF
Q317 2SC2785 AMP
Q316 2SC2785 BIAS
Q315 2SC1061 MOTOR DRIVE
Q314 2SA1175 SWITCHING
D303 1SS119
Q338 2SC2785 SWITCHING
Q326 2SC2785 SWITCHING
Q325 2SC2785 AMP
Q322 2SC1175 BIAS
Q324 2SA1048 BUFF
Q323 2SC1475
Q321 2SD789 MOTOR DRIVE
Q337 2SC2785 SWITCHING
IC305 TC4053BP SW
D308 MC931
TP407
IC306 μPC324C AMP
Q313 2SC2785 INVERTER
D319 RD5.1E-B1
Q333 DTC144ES SWITCHING
Q332 2SA1175 BUFF
Q331 2SC2785 BIAS
Q330 2SC1061 MOTOR DRIVE
Q346 2SA1175
Q347 DTC144ES SWITCHING
IC603 M54543L L.MOTOR DRIVE
D601 MC921
D602 MC921
Q601 2SD1164 PLUNGER
Q603 2SD773 PLUNGER
D603 MC911
Q602 2SD1164 DRIVE
Q604 2SD773 DRIVE
Q623 2SC2785 SWITCHING
PS301
PS302
PS303
PS304
TH302
RV306 TRACKING CENTER
RV307 DRUM SHIFT
RV308 FORWARD TORQUE
1/4H COUNTER
PHASE DET
FCX4
SPEED DET
IC301

Note:
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- ——— : B+ bus.
- – – – : B– bus.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

MOTOR), R. STATOR (REEL MOTOR) SCHEMATIC DIAGRAM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A
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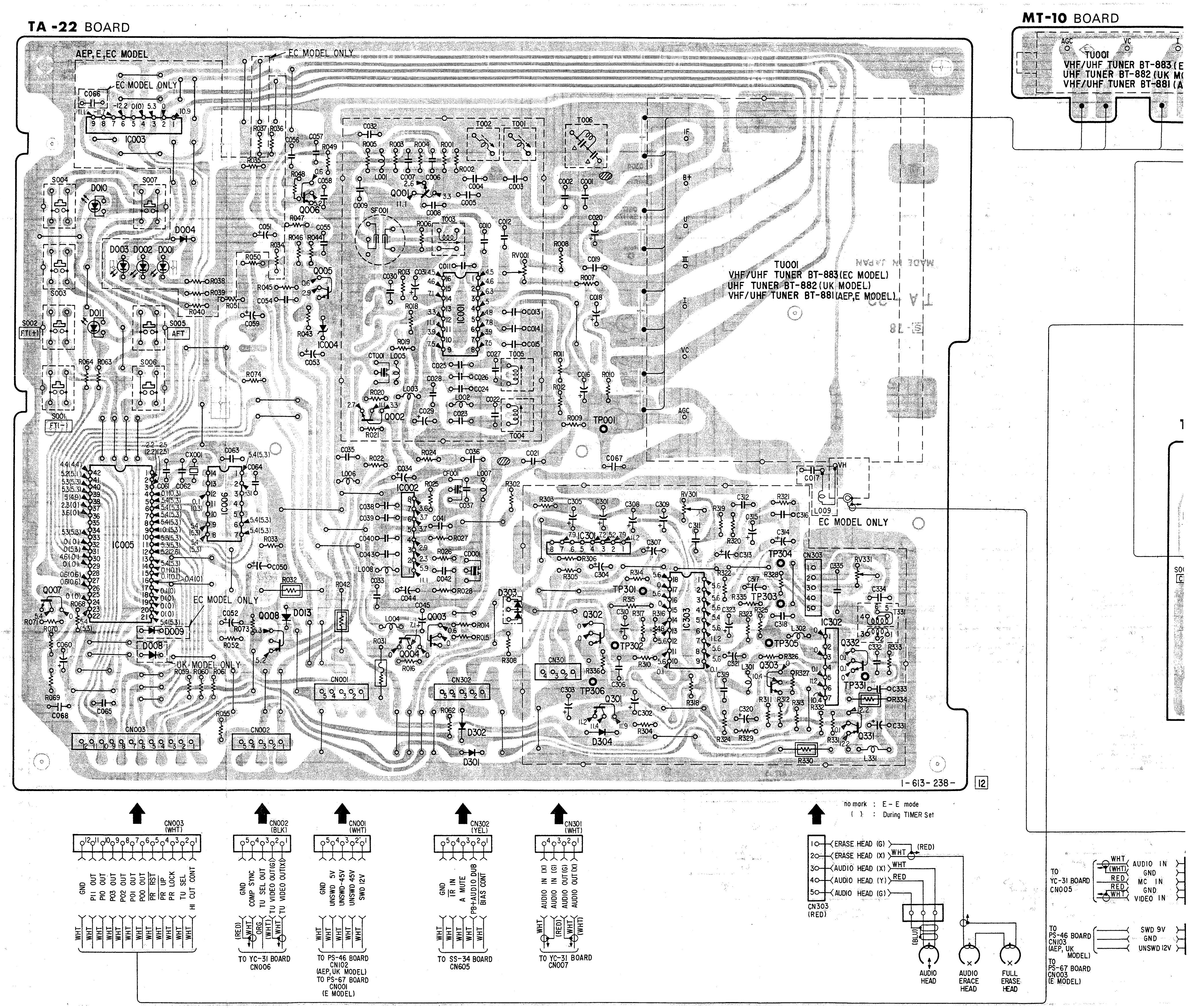
E
F
G
H
I
J
D301 MC921
Q301 2SC2785 SWITCHING
D302 MC911
Q302 DTC144ES SWITCHING
IC302 μPC358C AMP
Q308 2SC2785 SWITCHING
Q340 2SD789 SWITCHING
D345 DTA144ES SWITCHING
Q343 2SC2785 AMP
Q344 2SA1175 AMP
Q303 2SC2785 SWITCHING
Q341 DTC144ES INVERTER
Q615 DTA144ES SWITCHING
Q304 2SC2785 SWITCHING
Q342 DTC144ES INVERTER
Q617 2SA1175 BUFF
D608 1SS119
D303 1SS119
Q618,619,621 2SC2785 SWITCHING
Q620 DTC144ES SWITCHING
IC601 MB88551-133M MICRO PROCESSOR
IC301 CX194B SERVO
IC305 TC4053BP SW
Q312 2SC2785 SWITCHING
D321 1SS119
IC602 LA7205 END SENSOR
μPC324C AMP
D602 MC921
Q604 2SD773 DRIVE
Q623 2SC2785
Q624 DTA114ES
SWITCHING
1/4H COUNTER
PHASE DET
TRACON DL
PHASE DET
P2 LOOP
NOISE CLIPPER
V-SEP
INT VD
FCX4
SPEED DET
DL
PG SAMPLING
SWP OSC
DRUM FREE SPEED
CUE/REW CAP FREE SPEED
SWITCH POSITION (B)
SWITCH POSITION (A)
TP401
TP402
TP404
TP405
TP406
TP407
TP409
TP601
L601 100μH
CN601 (RED)
UNSWD 12V
IR
GND
CN602 (BLK)
SYS RESET
SEND REQ
SYS REQ
S DATA ST
S DATA TS
S CLK
VD/CTL
GND
TO TM-57 BOARD CN004
CN306 (YEL)
REC P
PB + AUDIO DUB
V MUTE
V.B.P
TO YC-31 BOARD CN004
CN605 (YEL)
BIAS CONT
PB + AUDIO DUB
A MUTE
IR
GND
TO TA-22 BOARD CN302
CN309 (WHT)
MC
RF SW P
COMP SYNC
CTL
GND
4.43MHz REF
TO YC-31 BOARD CN008
CN310 (WHT)
S REEL FG
UNSWD 5V
GND
CN311 (BLK)
T REEL FG
UNSWD 5V
GND
CN610 (RED)
GND (F)
F SW 1
F SW 2
GND
SWD 9V
TRACKING CONT
TRACKING CONT
POWER SW
CN613 (RED)
UNSWD 5V
GND
AGC CONT
CN603 (WHT)
TOP SENS
GND
L902 T COIL SENSOR
CN604 (YEL)
END SENS
GND
L901 S COIL SENSOR
CN608 (BLK)
LOAD END SW
GND
S903 LOAD END SW
CN607 (WHT)
REC PROOF SW
GND
C. ON SW
S901 REC PROOF/CASSETTE DOWN
CN606 (BLK)
C ON SW
GND
S904 CASSETTE ON SW
CN301 (WHT)
PG (A)
PG (S)
PG (Y)
PG (B)
DRUM
N BOARD
IC001 μPC1373H REMOTE CONTROL AMP
D001 PH302B INFRARED DETECTOR
SHAPER
PEAK DET
LIMITTER LEVEL SHIFT
ABLC
CP001
no mark : REC mode
RD-20 BOARD
PC001 SP1201-22 PULSE DET
RD-21 BOARD
PC101 SP1201-22 PULSE DET
FU-25 BOARD
S1 EJECT
S3 STOP
S5 PB
S7 REC
S8 POWER
S2 REW
S4 FF
S6 PAUSE
RV1 100k TRACKING
D1 PWR
D1 TLG123A

no mark : REC mode
( ) : PB mode
⟨ ⟩ : CUE mode
[ ] : FF/REW mode
⦅ ⦆ : LOADING/THREADING mode
《 》 : EJECT mode
【 】 : REV mode
Marked ✳ is not able to measure the voltage of it's position.

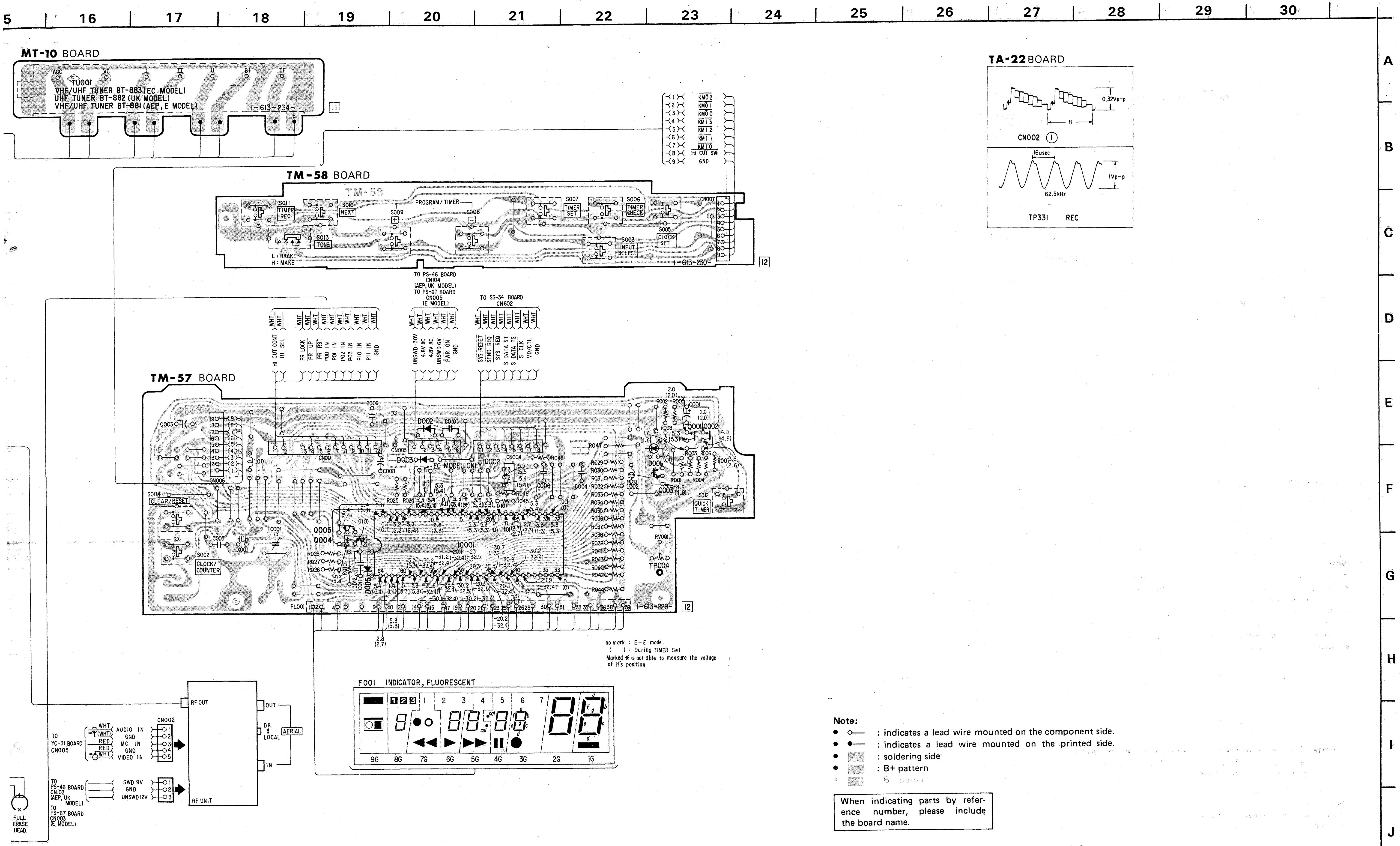
4-4. TA-22 (VIF, AFT, SIF, AUTO PROGRAM AUDIO), MT-10 (TUNER), TM-57 (TIMER INDICATOR), TM-58 (SWITCH) PRINTED WIRING BOARDS

– Ref. No. TA-22, MT-10 BOARD : 5000 series, TM-57, TM-58 BOARD : 6000 series –

Q , IC	D	ADJ, TP
IC003		
001		
006	010	
	004	
	003,002,001	RV001
005		
IC001		
IC004		
	011	
002		TP001
		RV301
IC006		
IC002		
IC005		
IC301		TP304
		RV331
		TP301
007		TP303
	303	
IC303		
332		
003,302	009	TP305
008,004,IC302		TP302
303	013	
		TP331
		TP306
301,331	302	
	304	
	301	
Q , IC	D	ADJ, TP


TA-22 BOARD
MT-10 BOARD
AEP,E,EC MODEL
EC MODEL ONLY
UK MODEL ONLY
TU001
VHF/UHF TUNER BT-883 (EC MODEL)
UHF TUNER BT-882 (UK MODEL)
VHF/UHF TUNER BT-881 (AEP,E MODEL)
1-613-238-
12
CN003 (WHT)
GND
P11 OUT
P10 OUT
P03 OUT
P02 OUT
P01 OUT
P00 OUT
PR RST
PR UP
PR LOCK
TU SEL
HI CUT CONT
CN002 (BLK)
GND
COMP SYNC
TU SEL OUT
TU VIDEO OUT(G)
TU VIDEO OUT(X)
TO YC-31 BOARD CN006
CN001 (WHT)
GND
UNSWD 5V
UNSWD-45V
UNSWD 45V
SWD 12V
TO PS-46 BOARD CN102 (AEP,UK MODEL)
TO PS-67 BOARD CN001 (E MODEL)
CN302 (YEL)
GND
IR IN
A MUTE
PB+AUDIO DUB
BIAS CONT
TO SS-34 BOARD CN605
CN301 (WHT)
AUDIO IN (X)
AUDIO IN (G)
AUDIO OUT (G)
AUDIO OUT (X)
TO YC-31 BOARD CN007
CN303 (RED)
ERASE HEAD (G)
ERASE HEAD (X)
AUDIO HEAD (X)
AUDIO HEAD (Y)
AUDIO HEAD (G)
AUDIO HEAD
AUDIO ERACE HEAD
FULL ERASE HEAD
TO YC-31 BOARD CN005
AUDIO IN
GND
MC IN
GND
VIDEO IN
TO PS-46 BOARD CN103 (AEP, UK MODEL)
TO PS-67 BOARD CN003 (E MODEL)
SWD 9V
GND
UNSWD 12V

no mark : E – E mode
( ) : During TIMER Set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30
A
B
C
D
E
F
G
H
I
J
MT-10 BOARD
TU001
VHF/UHF TUNER BT-883 (EC MODEL)
UHF TUNER BT-882 (UK MODEL)
VHF/UHF TUNER BT-881 (AEP, E MODEL)
1-613-234-
TM-58 BOARD
PROGRAM/TIMER
S011 TIMER REC
S010 NEXT
S009
S008
S007 TIMER SET
S006 TIMER CHECK
S005 CLOCK SET
S003 INPUT SELECT
S013 TONE
L: BRAKE
H: MAKE
CN007
1-613-230-
KM0 2
KM0 1
KM0 0
KM1 3
KM1 2
KM1 1
KM1 0
HI CUT SW
GND
TO PS-46 BOARD CN104 (AEP, UK MODEL)
TO PS-67 BOARD CN005 (E MODEL)
TO SS-34 BOARD CN602
HI CUT CONT
TU SEL
PR LOCK
PR UP
PR TEST
P00 IN
P01 IN
P02 IN
P03 IN
P10 IN
P11 IN
GND
UNSWD-30V
4.8V AC
4.8V AC
UNSWD 6V
PWR ON
GND
SYS RESET
SEND REQ
SYS REQ
S DATA ST
S DATA TS
S CLK
VD/CTL
GND
WHT
TM-57 BOARD
CN001
CN003
CN004
CN006
IC001
IC002
EC MODEL ONLY
S004 CLEAR/RESET
S002 CLOCK/COUNTER
S012 QUICK TIMER
RV001
TP004
X001
TC001
L001
1-613-229-
FL001
no mark : E-E mode.
( ) : During TIMER Set
Marked ✱ is not able to measure the voltage of it's position
F001 INDICATOR, FLUORESCENT
9G
8G
7G
6G
5G
4G
3G
2G
1G
RF OUT
OUT
DX LOCAL
AERIAL
IN
RF UNIT
CN002
AUDIO IN
GND
MC IN
GND
VIDEO IN
TO YC-31 BOARD CN005
TO PS-46 BOARD CN103 (AEP, UK MODEL)
TO PS-67 BOARD CN003 (E MODEL)
SWD 9V
GND
UNSWD 12V
FULL ERASE HEAD
TA-22 BOARD
0.32Vp-p
H
CN002 ①
16μsec
1Vp-p
62.5kHz
TP331 REC

Note:

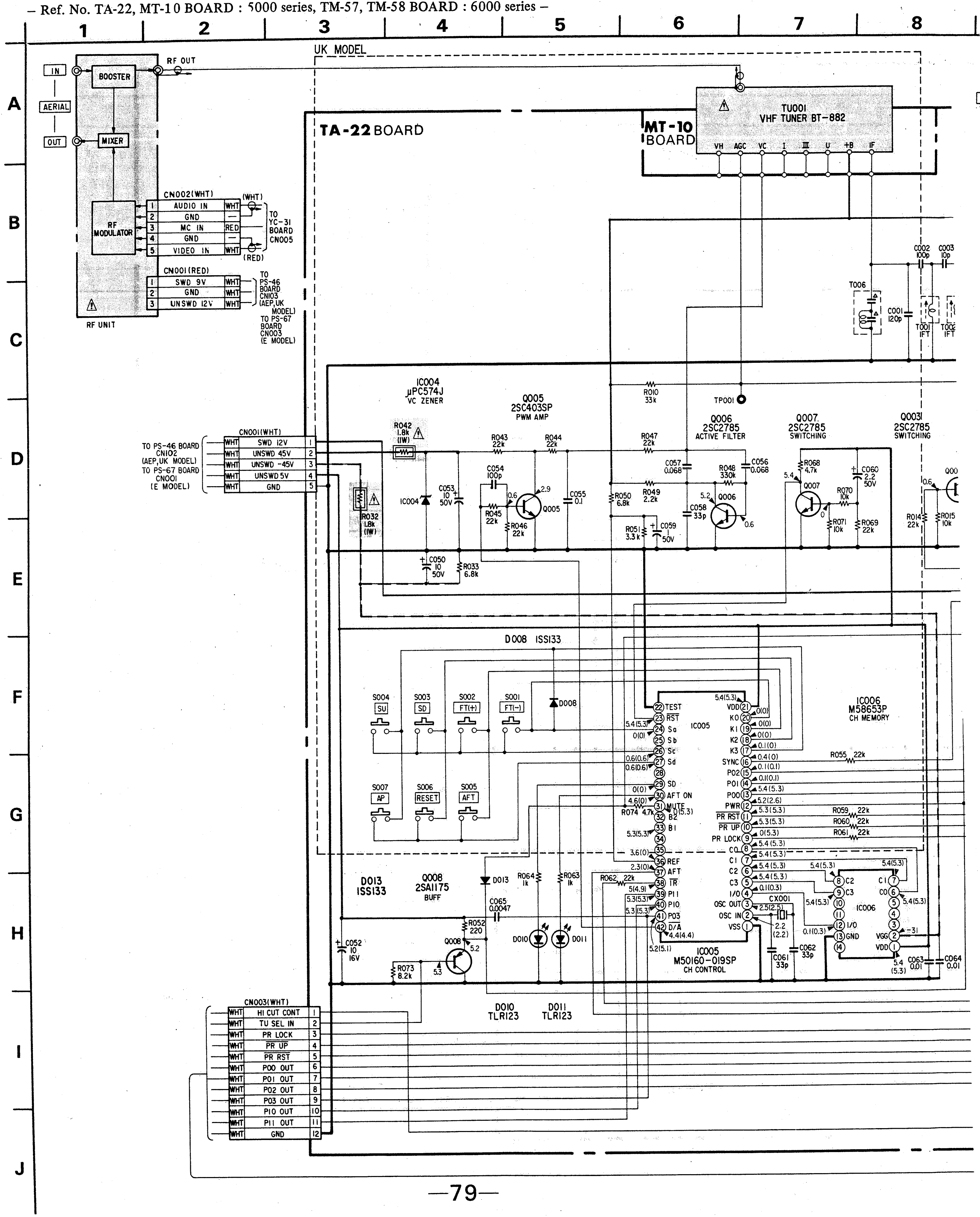
- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : soldering side
- ▨ : B+ pattern
- ▨ : B- pattern

When indicating parts by reference number, please include the board name.

TUNER/TIMER TUNER/TIMER

TA-22 (VIF, AFT, SIF, AUTO PROGRAM AUDIO), MT-10 (TUNER), TM-57 (TIMER INDICATOR), TM-58 (SWITCH) SCHEMATIC DIAGRAM

– Ref. No. TA-22, MT-10 BOARD : 5000 series, TM-57, TM-58 BOARD : 6000 series –


1
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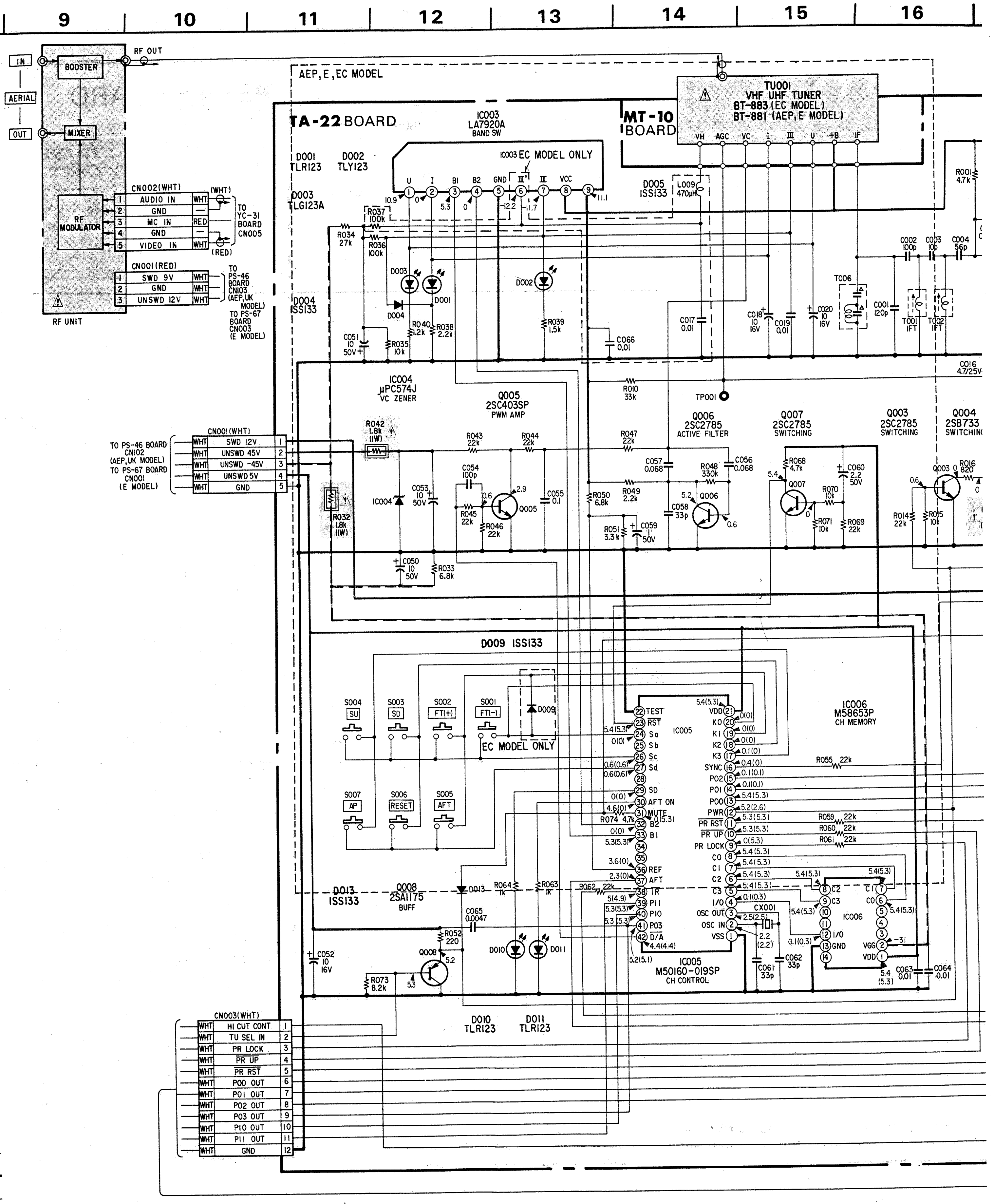
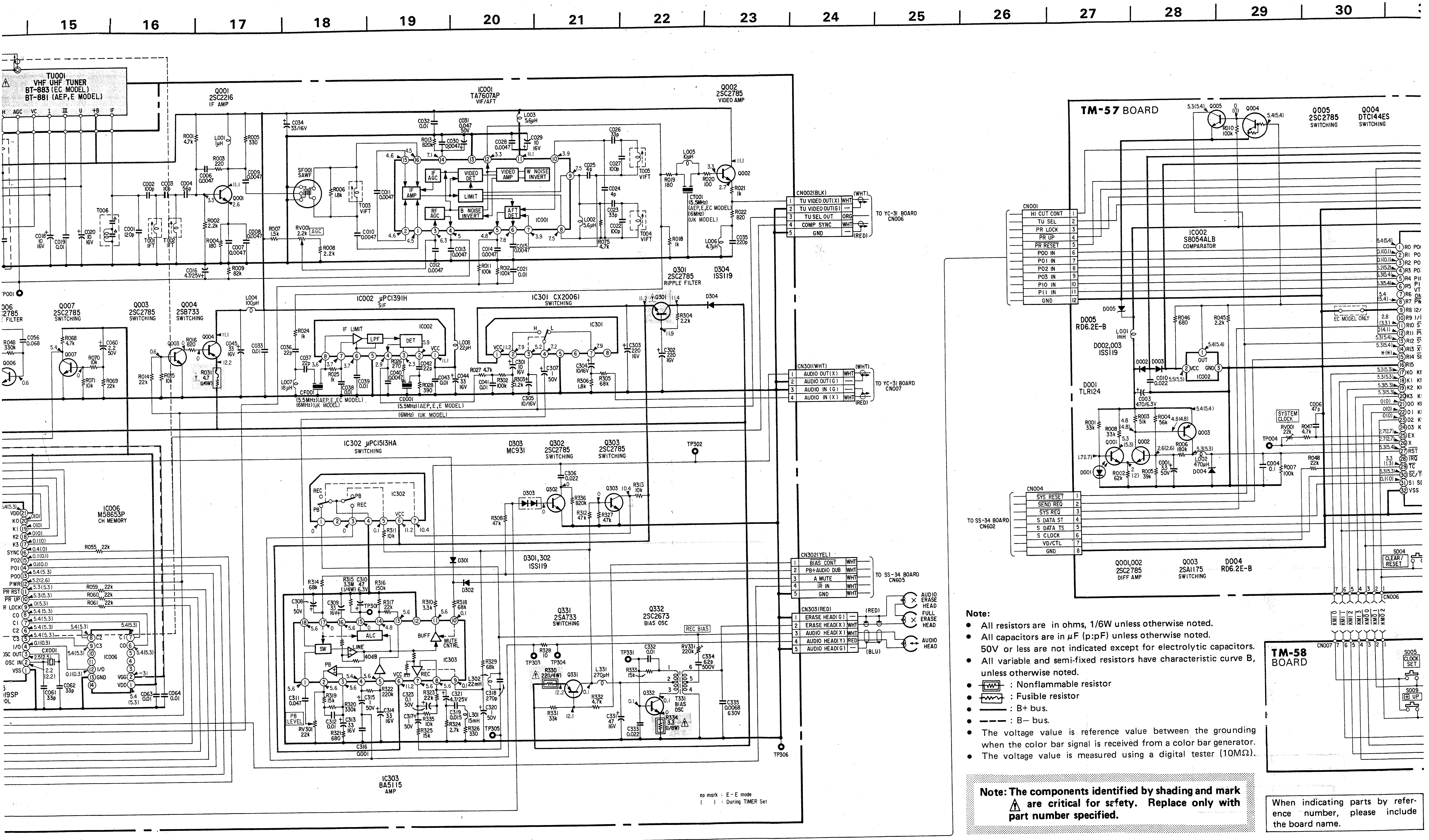
A
B
C
D
E
F
G
H
I
J
IN
AERIAL
OUT
BOOSTER
MIXER
RF OUT
RF MODULATOR
RF UNIT
CN002(WHT)
AUDIO IN
GND
MC IN
GND
VIDEO IN
TO YC-31 BOARD CN005
CN001(RED)
SWD 9V
GND
UNSWD 12V
TO PS-46 BOARD CN103 (AEP,UK MODEL) TO PS-67 BOARD CN003 (E MODEL)
UK MODEL
TA-22 BOARD
MT-10 BOARD
TU001 VHF TUNER BT-882
VH
AGC
VC
I
III
U
+B
IF
T006
T001 IFT
T002 IFT
TP001
IC004 μPC574J VC ZENER
Q005 2SC403SP PWM AMP
Q006 2SC2785 ACTIVE FILTER
Q007 2SC2785 SWITCHING
Q003 2SC2785 SWITCHING
CN001(WHT)
SWD 12V
UNSWD 45V
UNSWD -45V
UNSWD 5V
GND
TO PS-46 BOARD CN102 (AEP,UK MODEL) TO PS-67 BOARD CN001 (E MODEL)
R032 1.8k (1W)
D008 1SS133
S004 SU
S003 SD
S002 FT(+)
S001 FT(–)
S007 AP
S006 RESET
S005 AFT
IC005 M50160-019SP CH CONTROL
IC006 M58653P CH MEMORY
CX001
D013 1SS133
Q008 2SA1175 BUFF
D010 TLR123
D011 TLR123
CN003(WHT)
HI CUT CONT
TU SEL IN
PR LOCK
PR UP
PR RST
P00 OUT
P01 OUT
P02 OUT
P03 OUT
P10 OUT
P11 OUT
GND


9
10
11
12
13
14
15
16
IN
AERIAL
OUT
BOOSTER
MIXER
RF OUT
RF MODULATOR
RF UNIT
CN002(WHT)
AUDIO IN
GND
MC IN
GND
VIDEO IN
TO YC-31 BOARD CN005
CN001(RED)
SWD 9V
GND
UNSWD 12V
AEP,E,EC MODEL
TA-22 BOARD
MT-10 BOARD
IC003 LA7920A BAND SW
IC003 EC MODEL ONLY
TU001 VHF UHF TUNER BT-883 (EC MODEL) BT-881 (AEP,E MODEL)
D001 TLR123
D002 TLY123
D003 TLG123A
D004 1SS133
D005 1SS133
L009 470μH
T006
TP001
IC004 μPC574J VC ZENER
Q005 2SC403SP PWM AMP
Q006 2SC2785 ACTIVE FILTER
Q007 2SC2785 SWITCHING
Q003 2SC2785 SWITCHING
Q004 2SB733 SWITCHING
CN001(WHT)
SWD 12V
UNSWD 45V
UNSWD -45V
UNSWD 5V
GND
D009 1SS133
EC MODEL ONLY
S004 SU
S003 SD
S002 FT(+)
S001 FT(–)
S007 AP
S006 RESET
S005 AFT
IC005 M50160-019SP CH CONTROL
IC006 M58653P CH MEMORY
CX001
D013 1SS133
Q008 2SA1175 BUFF
D010 TLR123
D011 TLR123
CN003(WHT)
HI CUT CONT
TU SEL IN
PR LOCK
PR UP
PR RST
P00 OUT
P01 OUT
P02 OUT
P03 OUT
P10 OUT
P11 OUT
GND

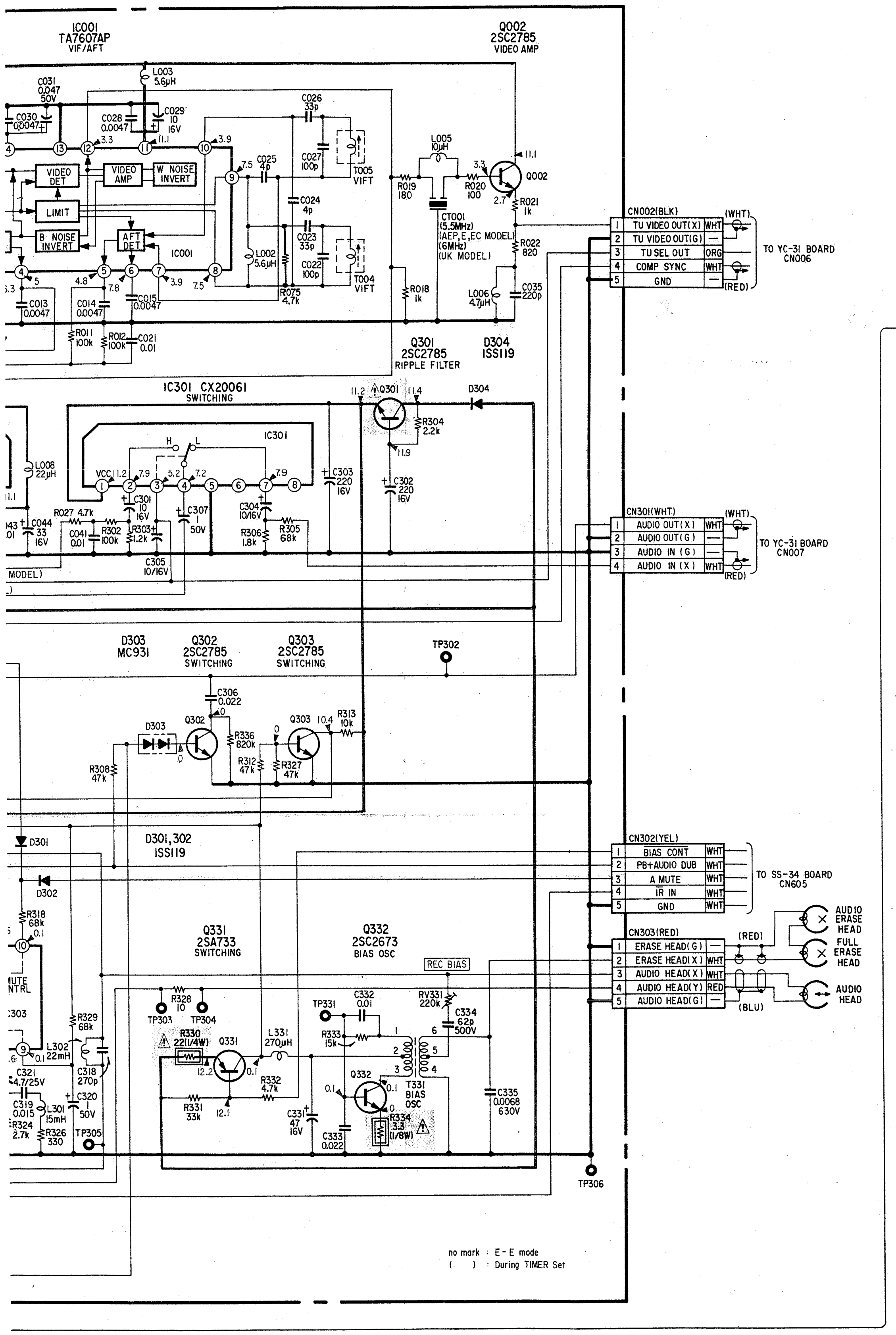

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
TU001 VHF UHF TUNER
BT-883 (EC MODEL)
BT-881 (AEP,E MODEL)
AGC VC I III U +B IF
Q001 2SC2216 IF AMP
IC001 TA7607AP VIF/AFT
Q002 2SC2785 VIDEO AMP
SF001 SAWF
T003 VIFT
T005 VIFT
T004 VIFT
T006
T001 IFT
T002 IFT
IF AGC
IF AMP
RF AGC
VIDEO DET
LIMIT
B NOISE INVERT
VIDEO AMP
W NOISE INVERT
AFT DET
CT001 (5.5MHz) (AEP,E,EC MODEL) (6MHz) (UK MODEL)
Q301 2SC2785 RIPPLE FILTER
D304 ISS119
CN002(BLK)
1 TU VIDEO OUT(X) WHT
2 TU VIDEO OUT(G)
3 TU SEL OUT ORG
4 COMP SYNC WHT
5 GND
TO YC-31 BOARD CN006
IC002 μPC1391H SIF
IF LIMIT
LPF
DET
IC301 CX20061 SWITCHING
CF001 (5.5MHz)(AEP,E,EC MODEL) (6MHz)(UK MODEL)
CD001 (5.5MHz)(AEP,E,E MODEL) (6MHz) (UK MODEL)
CN301(WHT)
1 AUDIO OUT(X) WHT
2 AUDIO OUT(G)
3 AUDIO IN (G)
4 AUDIO IN (X) WHT
TO YC-31 BOARD CN007
Q007 2SC2785 SWITCHING
Q003 2SC2785 SWITCHING
Q004 2SB733 SWITCHING
IC006 M58653P CH MEMORY
IC302 μPC1513HA SWITCHING
REC PB
D303 MC931
Q302 2SC2785 SWITCHING
Q303 2SC2785 SWITCHING
TP302
D301,302 ISS119
IC303 BA5115 AMP
ALC
SW
LINE
40dB
BUFF
MUTE CNTRL
PB LEVEL
RV301
Q331 2SA733 SWITCHING
Q332 2SC2673 BIAS OSC
REC BIAS
T331 BIAS OSC
TP303 TP304 TP305 TP306 TP331
CN302(YEL)
1 BIAS CONT WHT
2 PB+AUDIO DUB WHT
3 A MUTE WHT
4 IR IN WHT
5 GND WHT
TO SS-34 BOARD CN605
CN303(RED)
1 ERASE HEAD(G)
2 ERASE HEAD(X) WHT
3 AUDIO HEAD(X) WHT
4 AUDIO HEAD(Y) RED
5 AUDIO HEAD(G)
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO HEAD
TM-57 BOARD
Q005 2SC2785 SWITCHING
Q004 DTC144ES SWITCHING
CN001
1 HI CUT CONT
2 TU SEL
3 PR LOCK
4 PR UP
5 PR RESET
6 P00 IN
7 P01 IN
8 P02 IN
9 P03 IN
10 P10 IN
11 P11 IN
12 GND
IC002 S8054ALB COMPARATOR
D005 RD6.2E-B
D002,003 ISS119
D001 TLR124
SYSTEM CLOCK
RV001
TP004
CN004
1 SYS RESET
2 SEND REQ
3 SYS REQ
4 S DATA ST
5 S DATA TS
6 S CLOCK
7 VD/CTL
8 GND
TO SS-34 BOARD CN602
Q001,002 2SC2785 DIFF AMP
Q003 2SA1175 SWITCHING
D004 RD6.2E-B
EC MODEL ONLY
S004 CLEAR/RESET
CN006
TM-58 BOARD
CN007
S005 CLOCK SET
S009 UP
no mark : E-E mode
( ) : During TIMER Set

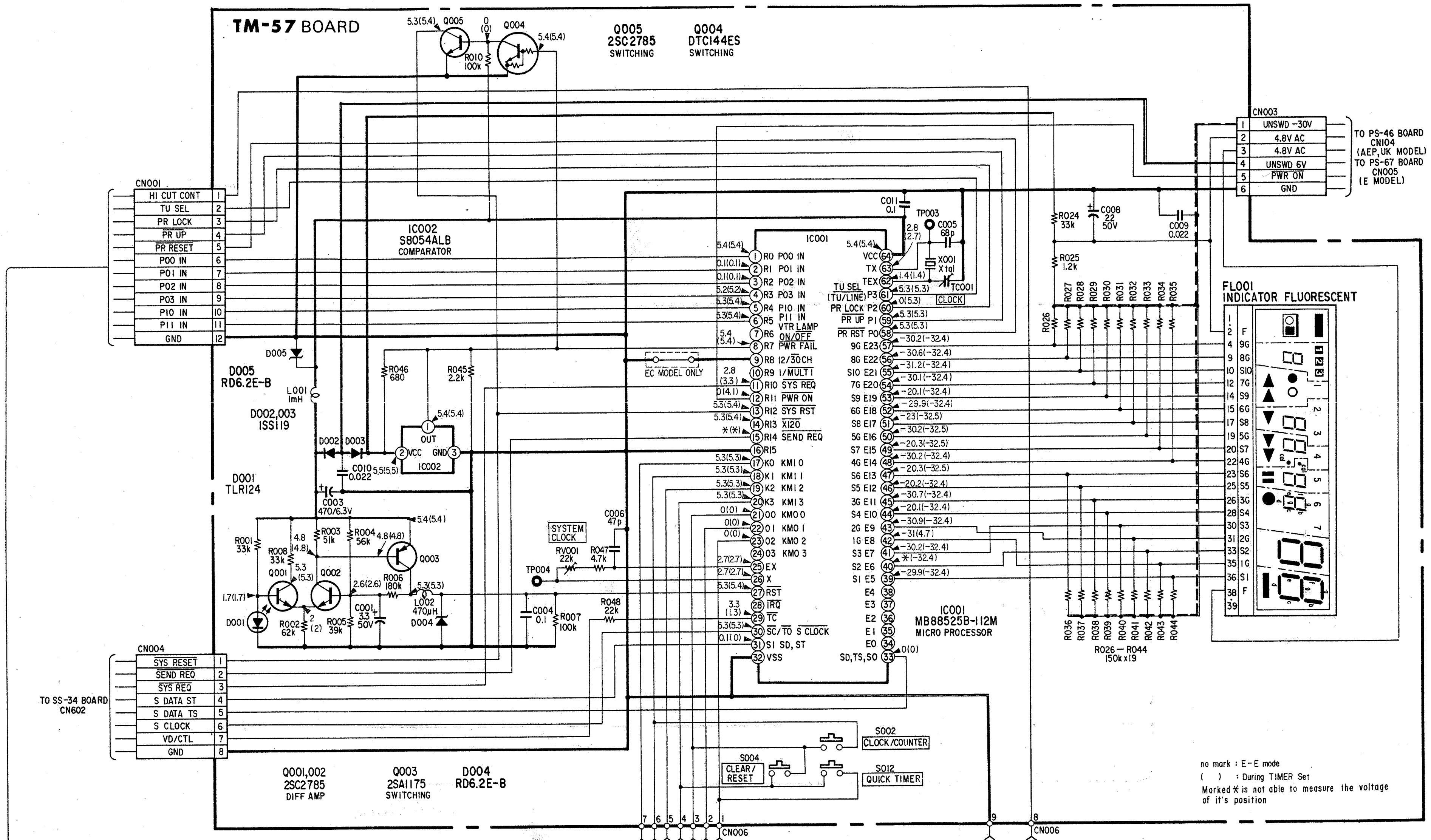
Note:

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- ——— : B+ bus.
- – – – : B– bus.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

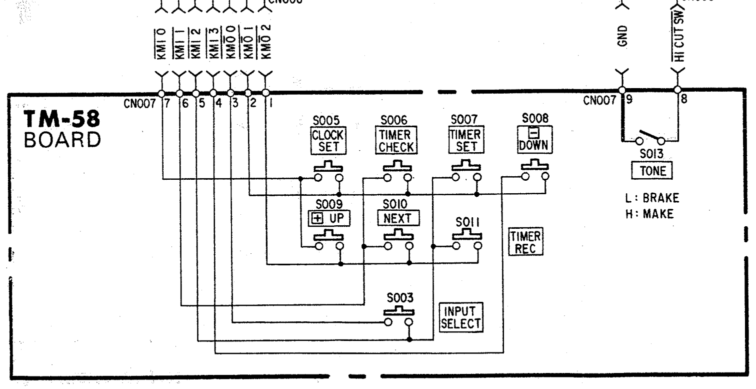

IC001 TA7607AP VIF/AFT
Q002 2SC2785 VIDEO AMP
VIDEO DET
VIDEO AMP
W NOISE INVERT
LIMIT
B NOISE INVERT
AFT DET
T005 VIFT
T004 VIFT
CT001 (5.5MHz) (AEP,E,EC MODEL) (6MHz) (UK MODEL)
Q301 2SC2785 RIPPLE FILTER
D304 1SS119
IC301 CX20061 SWITCHING
CN002(BLK)
TU VIDEO OUT(X)
TU VIDEO OUT(G)
TU SEL OUT
COMP SYNC
GND
TO YC-31 BOARD CN006
CN301(WHT)
AUDIO OUT(X)
AUDIO OUT(G)
AUDIO IN (G)
AUDIO IN (X)
TO YC-31 BOARD CN007
D303 MC931
Q302 2SC2785 SWITCHING
Q303 2SC2785 SWITCHING
TP302
D301,302 1SS119
CN302(YEL)
BIAS CONT
PB+AUDIO DUB
A MUTE
IR IN
GND
TO SS-34 BOARD CN605
Q331 2SA733 SWITCHING
Q332 2SC2673 BIAS OSC
REC BIAS
CN303(RED)
ERASE HEAD(G)
ERASE HEAD(X)
AUDIO HEAD(X)
AUDIO HEAD(Y)
AUDIO HEAD(G)
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO HEAD
TP303 TP304 TP331 TP305 TP306
T331 BIAS OSC
no mark : E-E mode
( ) : During TIMER Set


TM-57 BOARD
Q005 2SC2785 SWITCHING
Q004 DTC144ES SWITCHING
CN001
HI CUT CONT
TU SEL
PR LOCK
PR UP
PR RESET
P00 IN
P01 IN
P02 IN
P03 IN
P10 IN
P11 IN
GND
IC002 S8054ALB COMPARATOR
D005 RD6.2E-B
D002,003 1SS119
D001 TLR124
EC MODEL ONLY
SYSTEM CLOCK
TP003 TP004
X001 Xtal
TC001
IC001 MB88525B-112M MICRO PROCESSOR
CN004
SYS RESET
SEND REQ
SYS REQ
S DATA ST
S DATA TS
S CLOCK
VD/CTL
GND
TO SS-34 BOARD CN602
Q001,002 2SC2785 DIFF AMP
Q003 2SA1175 SWITCHING
D004 RD6.2E-B
S004 CLEAR/RESET
S002 CLOCK/COUNTER
S012 QUICK TIMER
CN003
UNSWD -30V
4.8V AC
4.8V AC
UNSWD 6V
PWR ON
GND
TO PS-46 BOARD CN104 (AEP,UK MODEL)
TO PS-67 BOARD CN005 (E MODEL)
FL001 INDICATOR FLUORESCENT
R026 – R044 150k×19
CN006

no mark : E-E mode
( ) : During TIMER Set
Marked ✻ is not able to measure the voltage of it's position

Note:

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- ——— : B+ bus.
- – – – : B– bus.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).


KMI 0 KMI 1 KMI 2 KMI 3 KMO 0 KMO 1 KMO 2
GND
HI CUT SW
TM-58 BOARD
CN007
S005 CLOCK SET
S006 TIMER CHECK
S007 TIMER SET
S008 DOWN
S009 UP
S010 NEXT
S011 TIMER REC
S003 INPUT SELECT
S013 TONE
L: BRAKE
H: MAKE

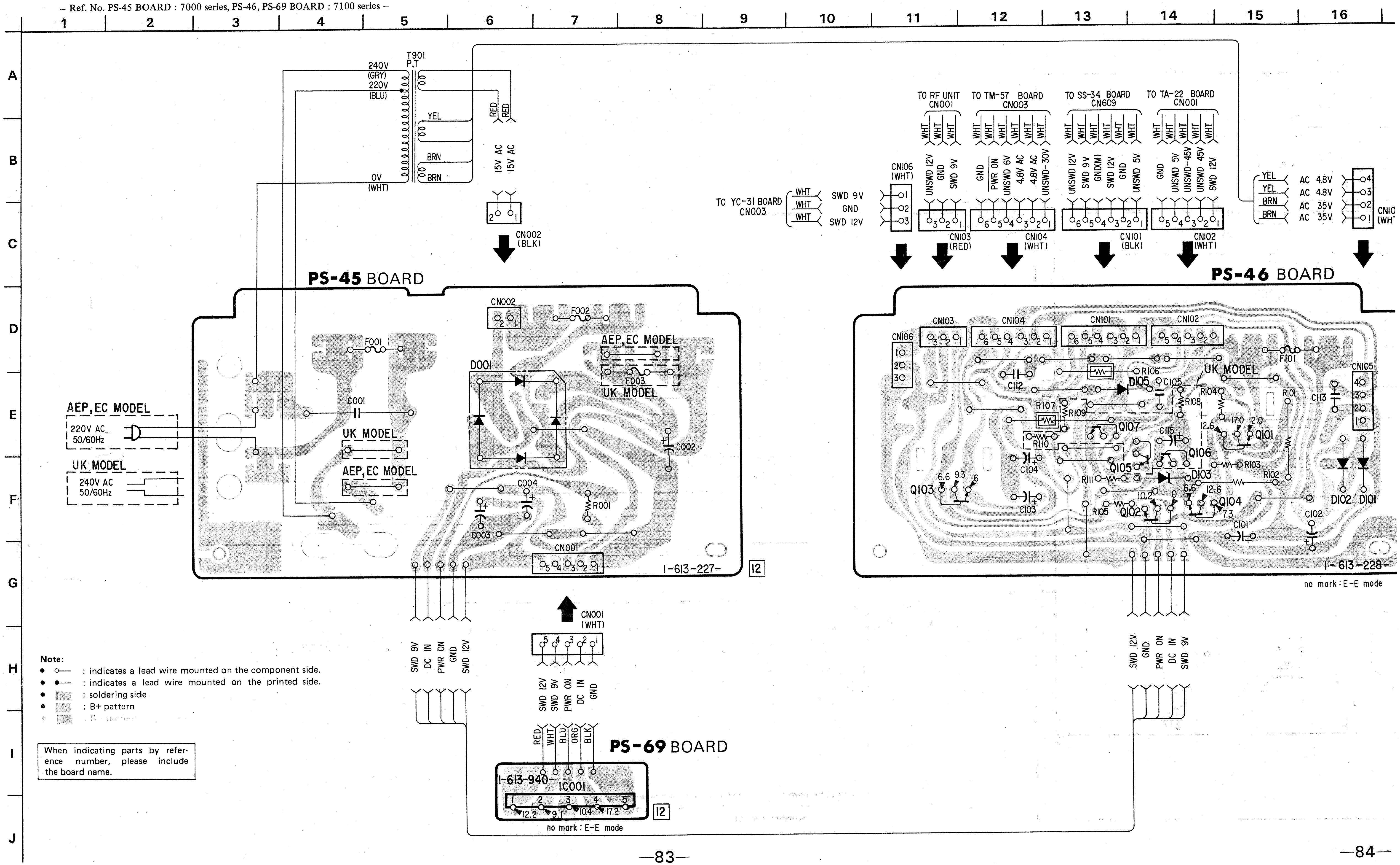
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

POWER SUPPLY

4-5-1. PS-45 (POWER SUPPLY), PS-46 (POWER), PS-69 (REGULATOR) PRINTED WIRING BOARDS . . . AEP, UK, EC MODEL

– Ref. No. PS-45 BOARD : 7000 series, PS-46, PS-69 BOARD : 7100 series –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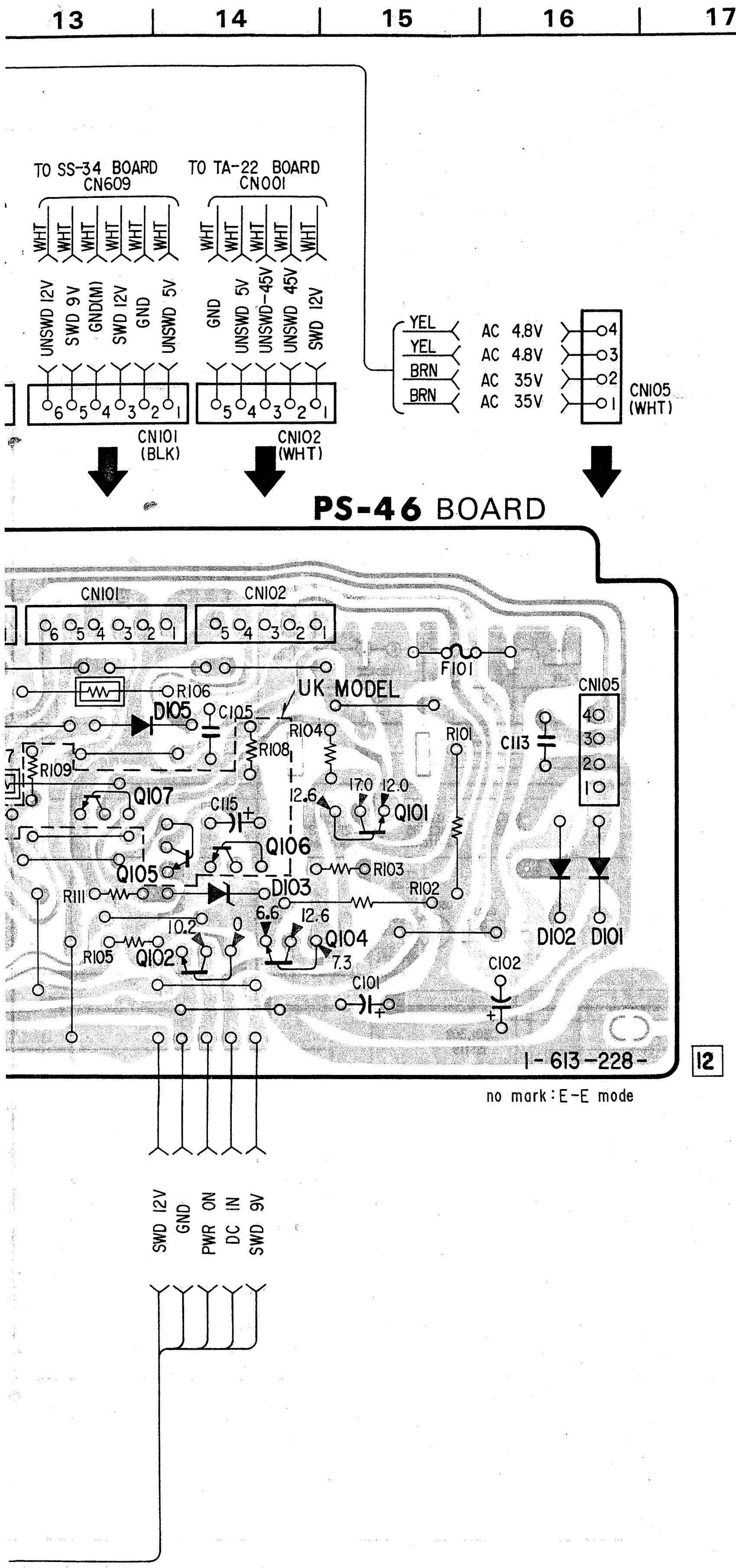
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
T901
P.T
240V
(GRY)
220V
(BLU)
0V
(WHT)
YEL
BRN
BRN
RED
RED
15V AC
15V AC
CN002
(BLK)
PS-45 BOARD
CN002
F002
F001
D001
AEP, EC MODEL
F003
UK MODEL
C001
UK MODEL
AEP, EC MODEL
C002
C004
C003
R001
CN001
1-613-227-
12
AEP, EC MODEL
220V AC
50/60Hz
UK MODEL
240V AC
50/60Hz
SWD 9V
DC IN
PWR ON
GND
SWD 12V
CN001
(WHT)
SWD 12V
SWD 9V
PWR ON
DC IN
GND
RED
WHT
BLU
ORG
BLK
PS-69 BOARD
1-613-940-
IC001
12.2
9.1
10.4
17.2
12
no mark : E-E mode
TO YC-31 BOARD
CN003
WHT
WHT
WHT
SWD 9V
GND
SWD 12V
CN106
(WHT)
TO RF UNIT
CN001
UNSWD 12V
GND
SWD 9V
CN103
(RED)
TO TM-57 BOARD
CN003
GND
PWR ON
UNSWD 6V
4.8V AC
4.8V AC
UNSWD -30V
CN104
(WHT)
TO SS-34 BOARD
CN609
UNSWD 12V
SWD 9V
GND(M)
SWD 12V
GND
UNSWD 5V
CN101
(BLK)
TO TA-22 BOARD
CN001
GND
UNSWD 5V
UNSWD -45V
UNSWD 45V
SWD 12V
CN102
(WHT)
YEL
YEL
BRN
BRN
AC 4.8V
AC 4.8V
AC 35V
AC 35V
CN105
(WH
PS-46 BOARD
CN106
CN103
CN104
CN101
CN102
F101
CN105
C112
R106
D105
C105
UK MODEL
R104
R101
C113
R108
R107
R109
Q107
12.6
17.0
12.0
Q101
R110
C115
Q106
C104
Q105
R103
D103
R102
Q103
6.6
9.3
6
R111
6.6
12.6
Q104
D102
D101
C103
R105
Q102
10.2
0
7.3
C101
C102
1-613-228-
no mark : E-E mode
SWD 12V
GND
PWR ON
DC IN
SWD 9V

Note:
- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : soldering side
- ▨ : B+ pattern

When indicating parts by reference number, please include the board name.

PS-45 (POWER SUPPLY), PS-46 (POWER), PS-69 (REGULATOR) SCHEMATIC DIAGRAM ... AEP, UK, EC MODEL

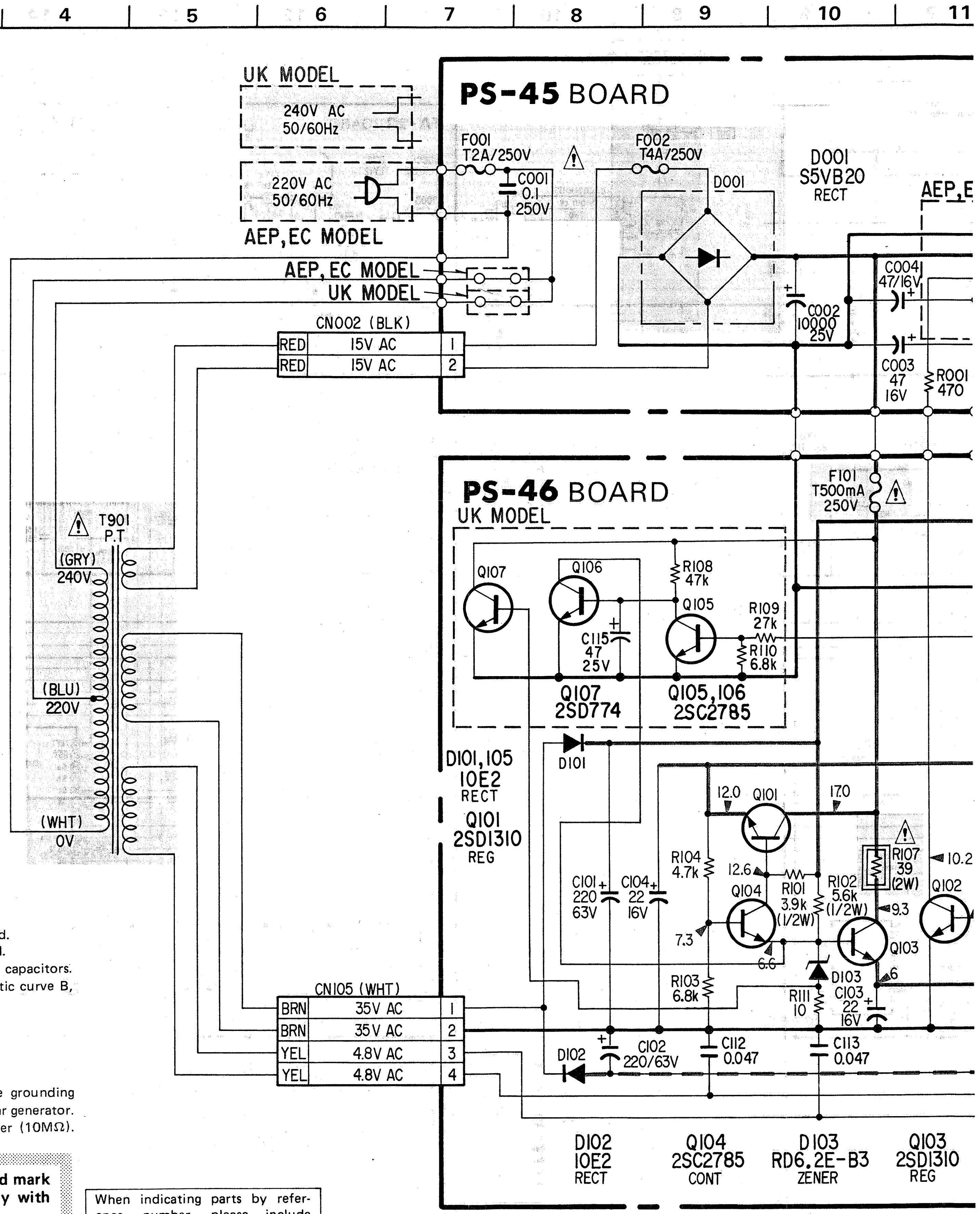
– Ref. No. PS-45 BOARD : 7000 series, PS-46, PS-69 BOARD : 7100 series –


13
14
15
16
17
TO SS-34 BOARD CN609
TO TA-22 BOARD CN001
WHT
UNSWD 12V
SWD 9V
GND(M)
SWD 12V
GND
UNSWD 5V
GND
UNSWD 5V
UNSWD -45V
UNSWD 45V
SWD 12V
YEL
YEL
BRN
BRN
AC 4.8V
AC 4.8V
AC 35V
AC 35V
CN105 (WHT)
CN101 (BLK)
CN102 (WHT)
PS-46 BOARD
CN101
CN102
F101
R106
D105
C105
UK MODEL
R104
R108
R101
C113
CN105
R109
Q107
C115
12.6
17.0
12.0
Q101
Q106
Q105
R103
R111
D103
R102
6.6
12.6
Q104
7.3
10.2
R105
Q102
C101
C102
D102
D101
1-613-228-
12
no mark : E-E mode
SWD 12V
GND
PWR ON
DC IN
SWD 9V

Note:

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- ——— : B+ bus.
- – – – : B– bus.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.


1
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7
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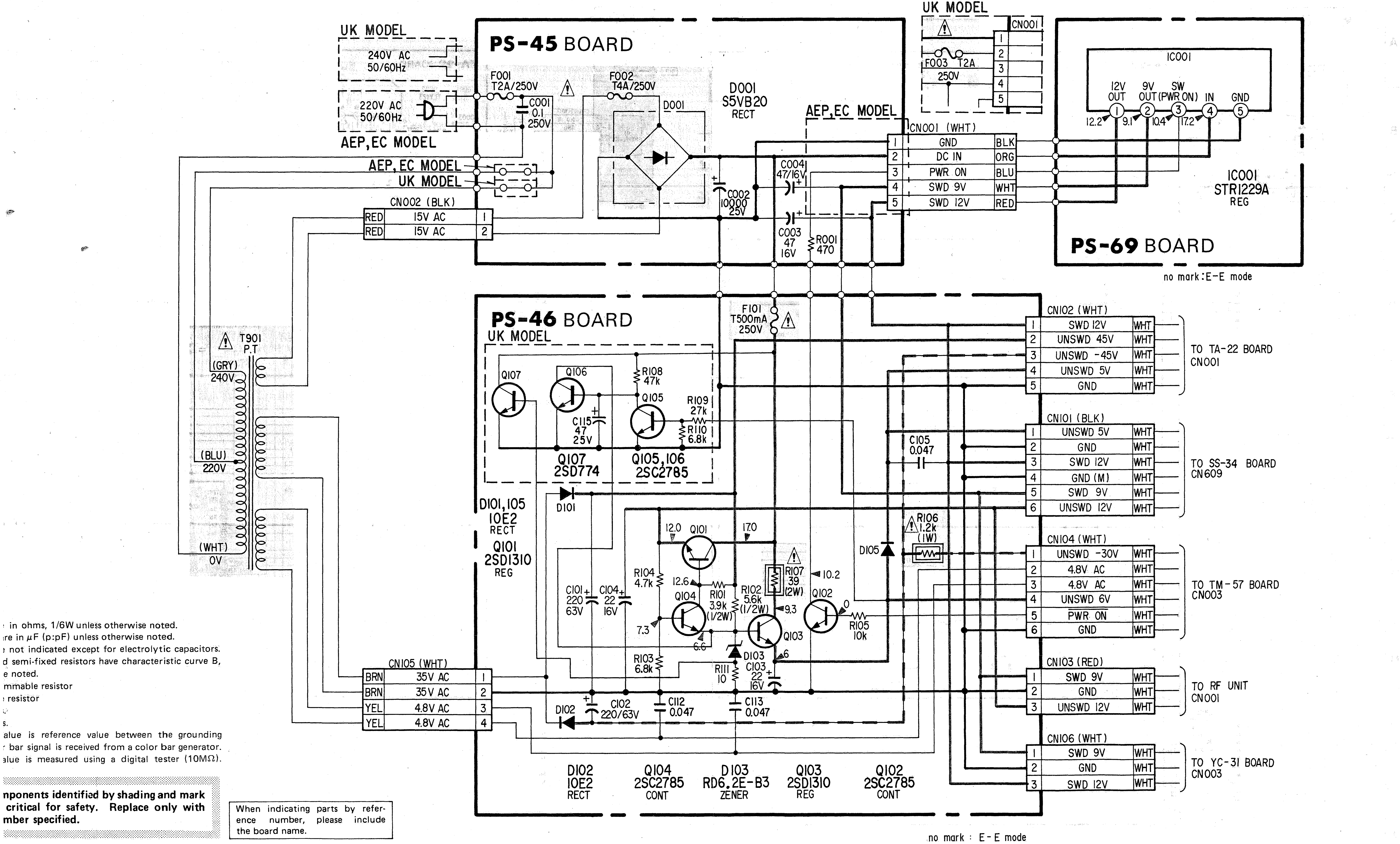
9
10
11
A
B
C
D
E
F
G
H
I
J
UK MODEL
240V AC 50/60Hz
220V AC 50/60Hz
AEP, EC MODEL
AEP, EC MODEL
UK MODEL
PS-45 BOARD
F001 T2A/250V
F002 T4A/250V
C001 0.1 250V
D001
D001 S5VB20 RECT
AEP, E
C004 47/16V
C002 10000 25V
C003 47 16V
R001 470
CN002 (BLK)
RED 15V AC 1
RED 15V AC 2
T901 P.T
(GRY) 240V
(BLU) 220V
(WHT) 0V
PS-46 BOARD
UK MODEL
F101 T500mA 250V
Q107
Q106
R108 47k
Q105
R109 27k
R110 6.8k
C115 47 25V
Q107 2SD774
Q105,106 2SC2785
D101,105 10E2 RECT
D101
Q101 2SD1310 REG
12.0 Q101
17.0
R107 39 (2W)
10.2
Q102
R104 4.7k
12.6
R101 3.9k (1/2W)
R102 5.6k (1/2W)
9.3
C101 220 63V
C104 22 16V
Q104
7.3
6.6
Q103
D103
6
R103 6.8k
R111 10
C103 22 16V
CN105 (WHT)
BRN 35V AC 1
BRN 35V AC 2
YEL 4.8V AC 3
YEL 4.8V AC 4
D102
C102 220/63V
C112 0.047
C113 0.047
D102 10E2 RECT
Q104 2SC2785 CONT
D103 RD6.2E-B3 ZENER
Q103 2SD1310 REG

When indicating parts by reference number, please include the board name.

PPLY), PS-46 (POWER), PS-69 (REGULATOR) SCHEMATIC DIAGRAM . . . AEP, UK, EC MODEL

RD : 7000 series, PS-46, PS-69 BOARD : 7100 series –


2
3
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11
12
13
14
15
16
17
UK MODEL
240V AC 50/60Hz
220V AC 50/60Hz
AEP,EC MODEL
AEP,EC MODEL
UK MODEL
PS-45 BOARD
F001 T2A/250V
F002 T4A/250V
C001 0.1 250V
D001
D001 S5VB20 RECT
C002 10000 25V
C004 47/16V
C003 47 16V
R001 470
CN002 (BLK)
RED 15V AC 1
RED 15V AC 2
UK MODEL
F003 T2A 250V
CN001
AEP,EC MODEL
CN001 (WHT)
1 GND BLK
2 DC IN ORG
3 PWR ON BLU
4 SWD 9V WHT
5 SWD 12V RED
IC001
12V OUT
9V OUT (PWR ON)
SW IN
GND
12.2
9.1
10.4
17.2
IC001 STR1229A REG
PS-69 BOARD
no mark : E-E mode
T901 P.T
(GRY) 240V
(BLU) 220V
(WHT) 0V
PS-46 BOARD
UK MODEL
Q107
Q106
R108 47k
Q105
R109 27k
R110 6.8k
C115 47 25V
Q107 2SD774
Q105,106 2SC2785
F101 T500mA 250V
D101
D101,105 10E2 RECT
Q101 2SD1310 REG
12.0
Q101
17.0
R107 39 (2W)
10.2
D105
R106 1.2k (1W)
C105 0.047
R104 4.7k
12.6
Q104
R101 3.9k (1/2W)
R102 5.6k (1/2W)
9.3
Q102
0
R105 10k
C101 220 63V
C104 22 16V
7.3
6.6
Q103
R103 6.8k
D103
6
R111 10
C103 22 16V
D102
C102 220/63V
C112 0.047
C113 0.047
CN105 (WHT)
BRN 35V AC 1
BRN 35V AC 2
YEL 4.8V AC 3
YEL 4.8V AC 4
D102 10E2 RECT
Q104 2SC2785 CONT
D103 RD6.2E-B3 ZENER
Q103 2SD1310 REG
Q102 2SC2785 CONT
CN102 (WHT)
1 SWD 12V WHT
2 UNSWD 45V WHT
3 UNSWD -45V WHT
4 UNSWD 5V WHT
5 GND WHT
TO TA-22 BOARD CN001
CN101 (BLK)
1 UNSWD 5V WHT
2 GND WHT
3 SWD 12V WHT
4 GND (M) WHT
5 SWD 9V WHT
6 UNSWD 12V WHT
TO SS-34 BOARD CN609
CN104 (WHT)
1 UNSWD -30V WHT
2 4.8V AC WHT
3 4.8V AC WHT
4 UNSWD 6V WHT
5 PWR ON WHT
6 GND WHT
TO TM-57 BOARD CN003
CN103 (RED)
1 SWD 9V WHT
2 GND WHT
3 UNSWD 12V WHT
TO RF UNIT CN001
CN106 (WHT)
1 SWD 9V WHT
2 GND WHT
3 SWD 12V WHT
TO YC-31 BOARD CN003
no mark : E-E mode

in ohms, 1/6W unless otherwise noted.
re in μF (p:pF) unless otherwise noted.
not indicated except for electrolytic capacitors.
d semi-fixed resistors have characteristic curve B,
e noted.
mmable resistor
resistor

s.
alue is reference value between the grounding
bar signal is received from a color bar generator.
alue is measured using a digital tester (10MΩ).

nponents identified by shading and mark critical for safety. Replace only with mber specified.

When indicating parts by reference number, please include the board name.

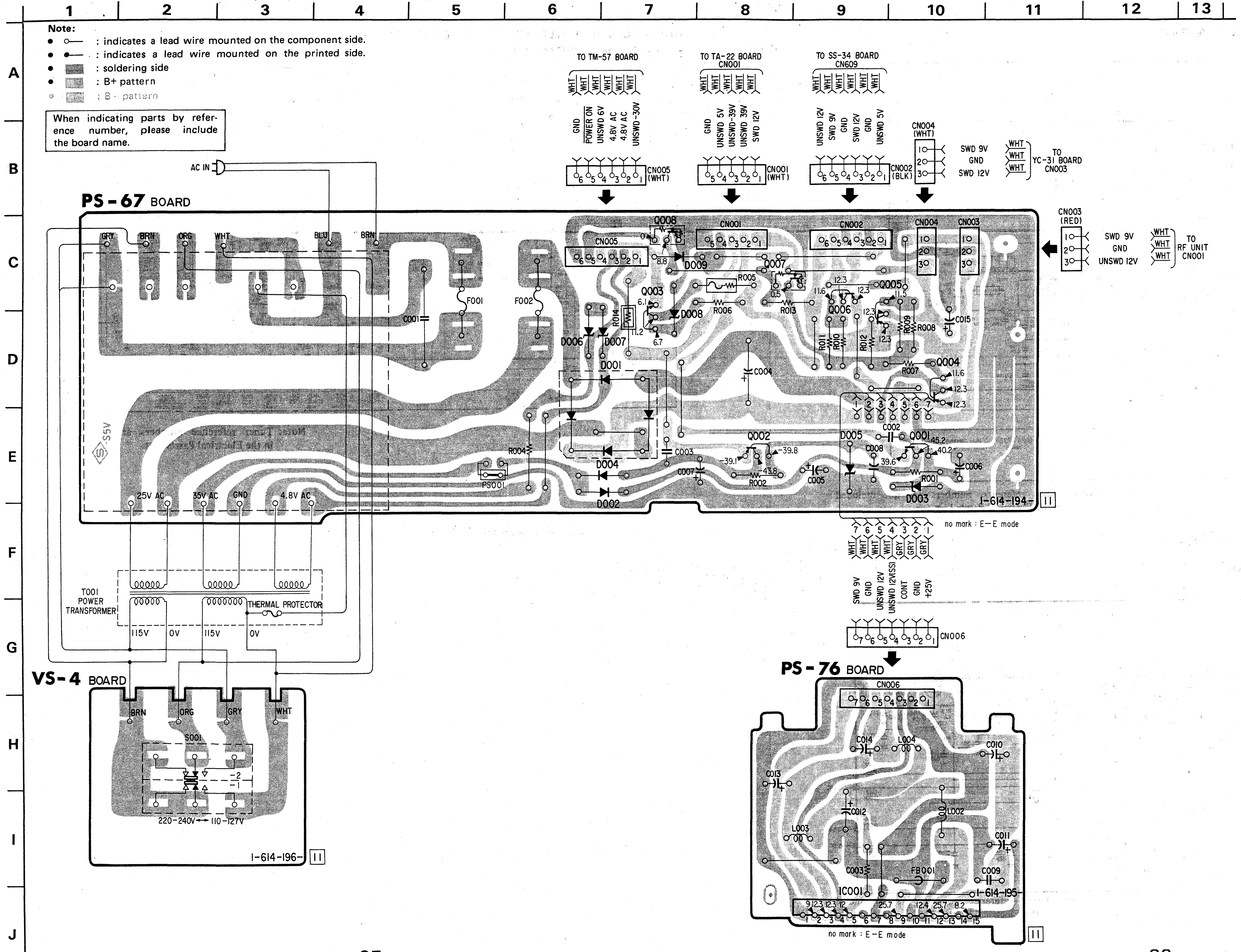
4-5-2. PS-67 (POWER SUPPLY), PS-76 (REGULATOR), VS-4 (VOLTAGE SELECTOR) PRINTED WIRING BOARDS...E MODEL

– Ref. No. PS-67 BOARD : 7200 series, PS-76, VS-4 BOARD : 7300 series –

Note:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ▨ : soldering side
- ▨ : B+ pattern
- ▨ : B– pattern

When indicating parts by reference number, please include the board name.


1
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7
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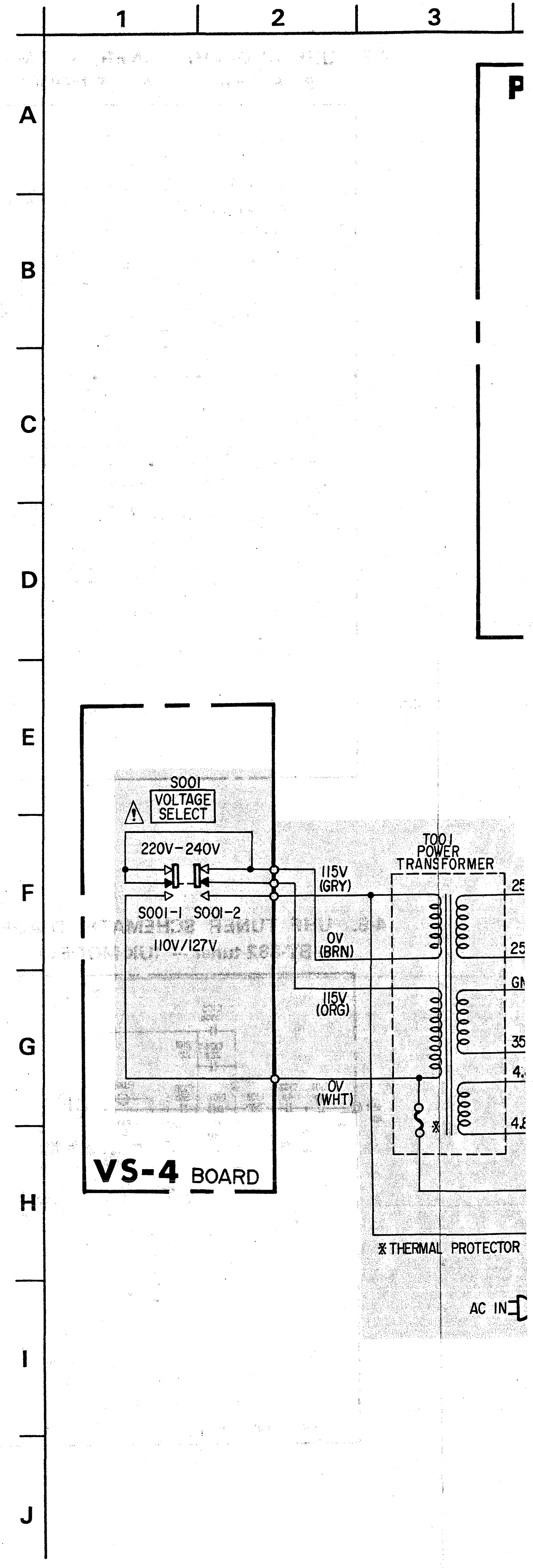
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
TO TM-57 BOARD
WHT WHT WHT WHT WHT WHT
GND
POWER ON
UNSWD 6V
4.8V AC
4.8V AC
UNSWD -30V
CN005 (WHT)
TO TA-22 BOARD CN001
GND
UNSWD 5V
UNSWD -39V
UNSWD 39V
SWD 12V
CN001 (WHT)
TO SS-34 BOARD CN609
UNSWD 12V
SWD 9V
GND
SWD 12V
GND
UNSWD 5V
CN002 (BLK)
CN004 (WHT)
SWD 9V
GND
SWD 12V
TO YC-31 BOARD CN003
CN003 (RED)
SWD 9V
GND
UNSWD 12V
TO RF UNIT CN001
AC IN
PS-67 BOARD
GRY
BRN
ORG
WHT
BLU
BRN
F001
F002
C001
Q008
Q003
Q007
Q005
Q006
Q004
Q002
Q001
D001
D002
D003
D004
D005
D006
D007
D008
D009
R001
R002
R004
R005
R006
R007
R008
R009
R010
R011
R012
R013
R014
C002
C003
C004
C005
C006
C007
C008
C015
PS001
25V AC
35V AC
GND
4.8V AC
S5V
1-614-194- 11
no mark : E–E mode
SWD 9V
GND
UNSWD 12V
UNSWD 12V(SS)
CONT
GND
+25V
CN006
T001 POWER TRANSFORMER
THERMAL PROTECTOR
115V
0V
115V
0V
VS-4 BOARD
BRN
ORG
GRY
WHT
S001
220-240V ↔ 110-127V
1-614-196- 11
PS-76 BOARD
CN006
C009
C010
C011
C012
C013
C014
L002
L003
L004
FB001
IC001
C003
1-614-195-
no mark : E–E mode

PS-67 (POWER SUPPLY), PS-76 (REGULATOR),

– Ref. No. PS-67 BOARD : 7200 series, PS-76, VS-4 BOARD


1
2
3
A
B
C
D
E
F
G
H
I
J
S001 VOLTAGE SELECT
220V-240V
S001-1 S001-2
110V/127V
115V (GRY)
0V (BRN)
115V (ORG)
0V (WHT)
T001 POWER TRANSFORMER
VS-4 BOARD
THERMAL PROTECTOR
AC IN

(), PS-76 (REGULATOR), VS-4 (VOLTAGE SELECTOR) SCHEMATIC DIAGRAM . . . E MODEL

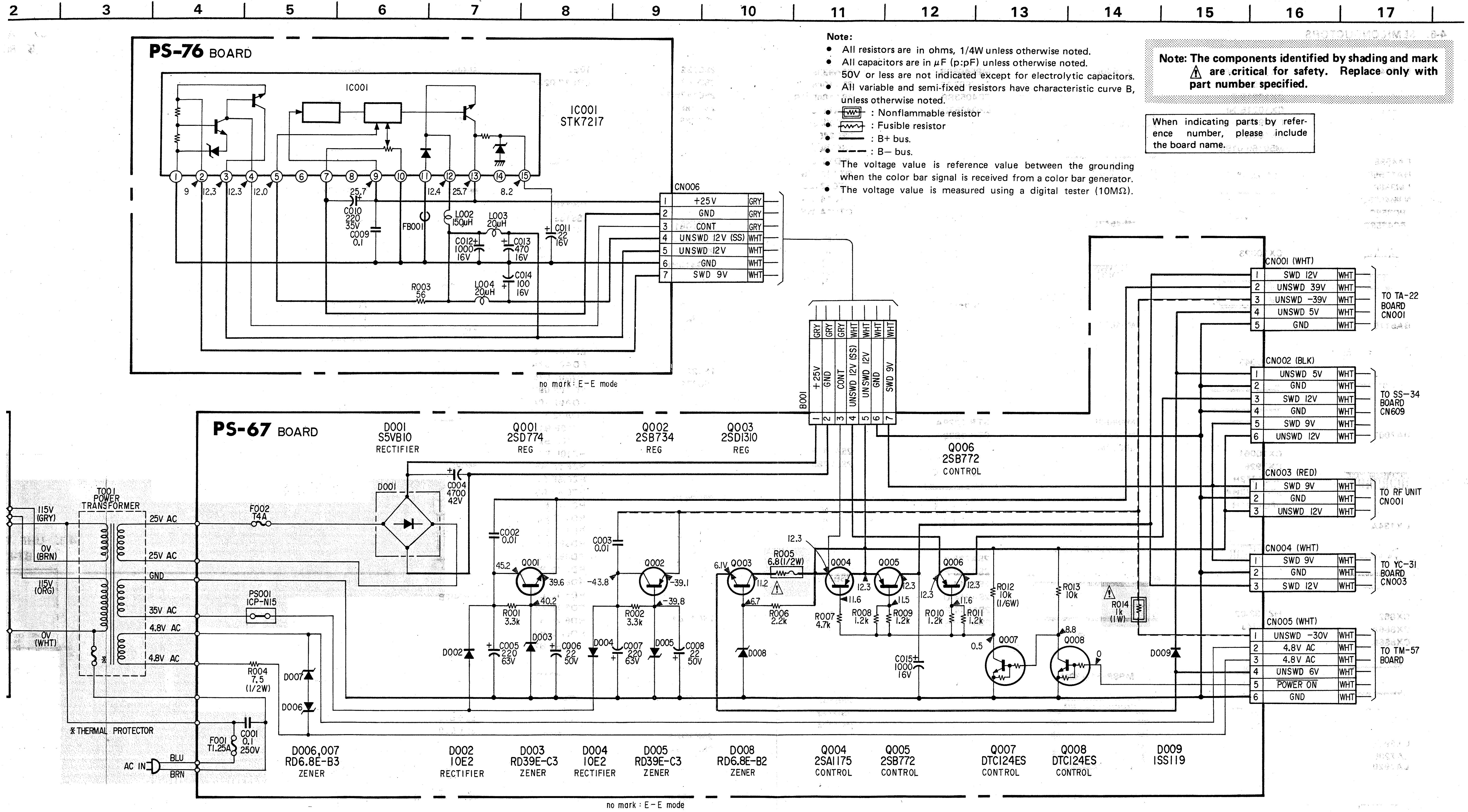
7200 series, PS-76, VS-4 BOARD : 7300 series –

Note:

- All resistors are in ohms, 1/4W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- ▭ : Nonflammable resistor
- ▭ : Fusible resistor
- —— : B+ bus.
- – – – : B– bus.
- The voltage value is reference value between the grounding when the color bar signal is received from a color bar generator.
- The voltage value is measured using a digital tester (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.


2
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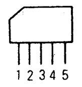
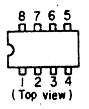
8
9
10
11
12
13
14
15
16
17
PS-76 BOARD
IC001
IC001
STK7217
9
12.3
12.3
12.0
25.7
12.4
25.7
8.2
C010
220
35V
C009
0.1
FB001
L002
150μH
L003
20μH
C012
1000
16V
C013
470
16V
C014
100
16V
C011
22
16V
R003
56
L004
20μH
CN006
1 +25V GRY
2 GND GRY
3 CONT GRY
4 UNSWD 12V (SS) WHT
5 UNSWD 12V WHT
6 GND WHT
7 SWD 9V WHT
no mark : E-E mode
B001
+25V GRY
GND GRY
CONT GRY
UNSWD 12V (SS) WHT
UNSWD 12V WHT
GND WHT
SWD 9V WHT
PS-67 BOARD
D001
S5VB10
RECTIFIER
Q001
2SD774
REG
Q002
2SB734
REG
Q003
2SD1310
REG
Q006
2SB772
CONTROL
T001
POWER
TRANSFORMER
115V
(GRY)
0V
(BRN)
115V
(ORG)
0V
(WHT)
25V AC
25V AC
GND
35V AC
4.8V AC
4.8V AC
F002
T4A
PS001
ICP-N15
R004
7.5
(1/2W)
D007
D006
※THERMAL PROTECTOR
F001
T1.25A
C001
0.1
250V
AC IN
BLU
BRN
C004
4700
42V
C002
0.01
45.2
39.6
40.2
R001
3.3k
D003
D002
C005
220
63V
C006
22
50V
C003
0.01
-43.8
-39.1
-39.8
R002
3.3k
D004
C007
220
63V
D005
C008
22
50V
6.1V
11.2
6.7
R005
6.8(1/2W)
R006
2.2k
D008
12.3
Q004
Q005
Q006
12.3
12.3
12.3
12.3
11.6
11.5
11.6
R007
4.7k
R008
1.2k
R009
1.2k
R010
1.2k
R011
1.2k
R012
10k
(1/6W)
R013
10k
C015
1000
16V
0.5
Q007
8.8
Q008
0
R014
1k
(1W)
D009
CN001 (WHT)
1 SWD 12V WHT
2 UNSWD 39V WHT
3 UNSWD -39V WHT
4 UNSWD 5V WHT
5 GND WHT
TO TA-22 BOARD CN001
CN002 (BLK)
1 UNSWD 5V WHT
2 GND WHT
3 SWD 12V WHT
4 GND WHT
5 SWD 9V WHT
6 UNSWD 12V WHT
TO SS-34 BOARD CN609
CN003 (RED)
1 SWD 9V WHT
2 GND WHT
3 UNSWD 12V WHT
TO RF UNIT CN001
CN004 (WHT)
1 SWD 9V WHT
2 GND WHT
3 SWD 12V WHT
TO YC-31 BOARD CN003
CN005 (WHT)
1 UNSWD -30V WHT
2 4.8V AC WHT
3 4.8V AC WHT
4 UNSWD 6V WHT
5 POWER ON WHT
6 GND WHT
TO TM-57 BOARD
D006,007
RD6.8E-B3
ZENER
D002
10E2
RECTIFIER
D003
RD39E-C3
ZENER
D004
10E2
RECTIFIER
D005
RD39E-C3
ZENER
D008
RD6.8E-B2
ZENER
Q004
2SA1175
CONTROL
Q005
2SB772
CONTROL
Q007
DTC124ES
CONTROL
Q008
DTC124ES
CONTROL
D009
1SS119
no mark : E-E mode

4-6. SEMICONDUCTORS

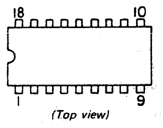
BA634



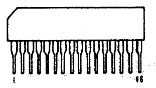
BA4558
HA17558
LM358P
NJM4558D
µPC358C
µPC4558C


8 7 6 5
1 2 3 4
(Top view)

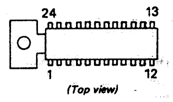
BA5115


18
10
1
9
(Top view)

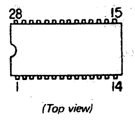
BA7007



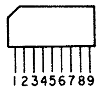
CX134A


24
13
1
12
(Top view)

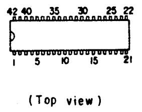
CX862
CX866A
CX866B


28
15
1
14
(Top view)

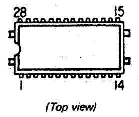
CX894
LA7205
LA7920



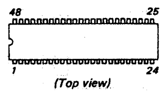
CX10021A-P
CX10021A-NP
CX1021B-P
CX1021B-NP
CX194B-0
CX194B-5
M50160-019SP


42 40 35 30 25 22
1 5 10 15 21
(Top view)

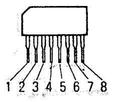
CX10023


28
15
1
14
(Top view)

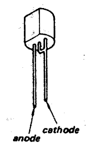
CX20043


48
25
1
24
(Top view)

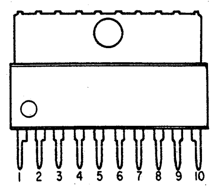
CX20061
CX7926
µPC1373H
µPC1373HA
µPC1391H



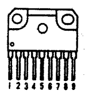
HZT33-02
µPC574J


cathode
anode

LB1640N


1 2 3 4 5 6 7 8 9 10

M54543L



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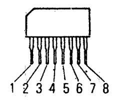
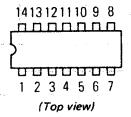
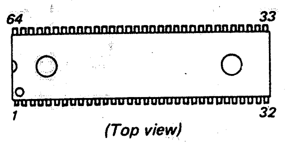


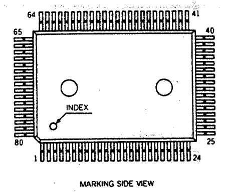
M58653P
MB3614
µPC324C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

MB88525B-112M


64
33
1
32
(Top view)

MB88551-133M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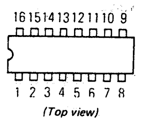
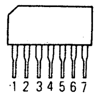
41
65
40
80
25
1
24
INDEX
MARKING SIDE VIEW

MB84053B
TA7607AP
TC4053BP
µPD4053BC


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8
(Top view)

µPC1513HA



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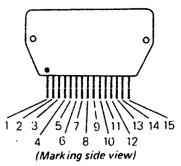
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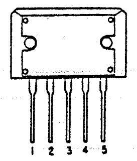
4 6 8 10 12
(Marking side view)

STR-1229A
STR-1229



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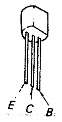
2SA733-P
2SA844-C
2SA844-D
2SA844-E
2SC1740S



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2SA1048-GR
2SA1115
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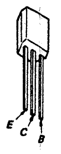
2SC2603
2SD1310
DTA114ES
DTC124ES
DTC144ES
DTC144WS



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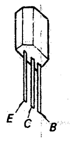

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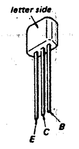
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E C B

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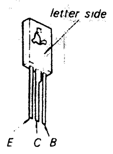
letter side
E C B

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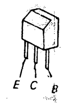
2SD774



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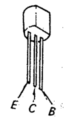
2SC1475-13
2SD788
2SD789



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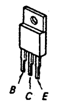

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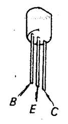

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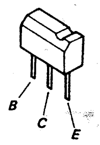

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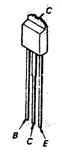

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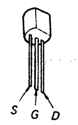

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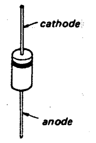
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anode

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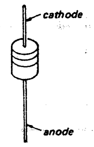
1SS133
1SS148


cathode
anode

EQA02-06E
EQA02-07A
EQA02-07B1
EQA02-09D
EQA02-10A
EQA02-10B
HZ10E-B1
HZ10E-B2
HZ10E-B3
HZ6.2E-B3
HZ6.8E-B2
HZ6.8E-B3
RD10E-B1
RD10E-B2
RD10E-B3
RD39E-C3
RD39J-N3
RD5.1E-B1
RD5.1E-L1
RD5.1E-L2
RD5.1E-L3
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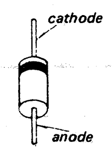
RD6.2E-B3
RD6.8E-B2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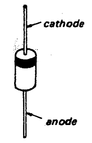
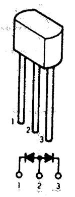
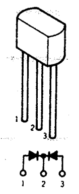

cathode
anode

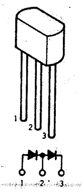
MC911



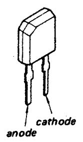
MC921



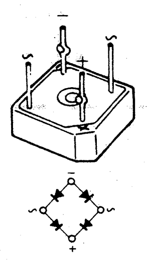
MC931



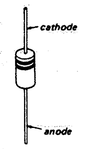
PH302B


anode
cathode

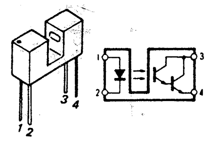
S5VB10
S5VB20



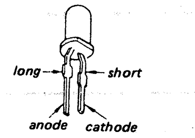
SIB01-02


cathode
anode

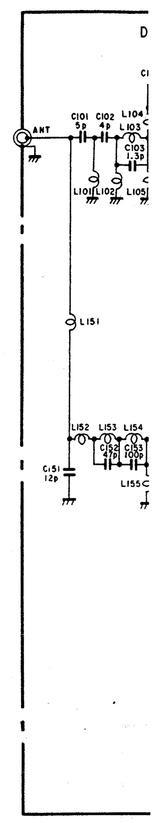
SPI201-22



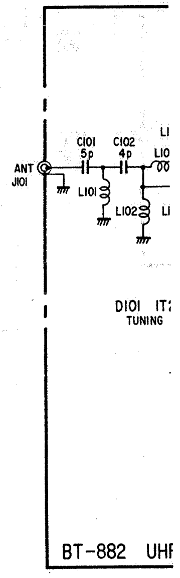
TLG123A
TLR123
TLR124
TLY123


long
short
anode
cathode

4-7. UHF AN
– BT-881


ANT
C101 5p
C102 4p
L104
L103
C103
L101
L102
L105
L151
L152
L153
L154
C151 12p
L155

4-8. UHF TU
– BT-882


ANT J101
C101 5p
C102 4p
L101
L102
D101 IT
TUNING
BT-882 UHF

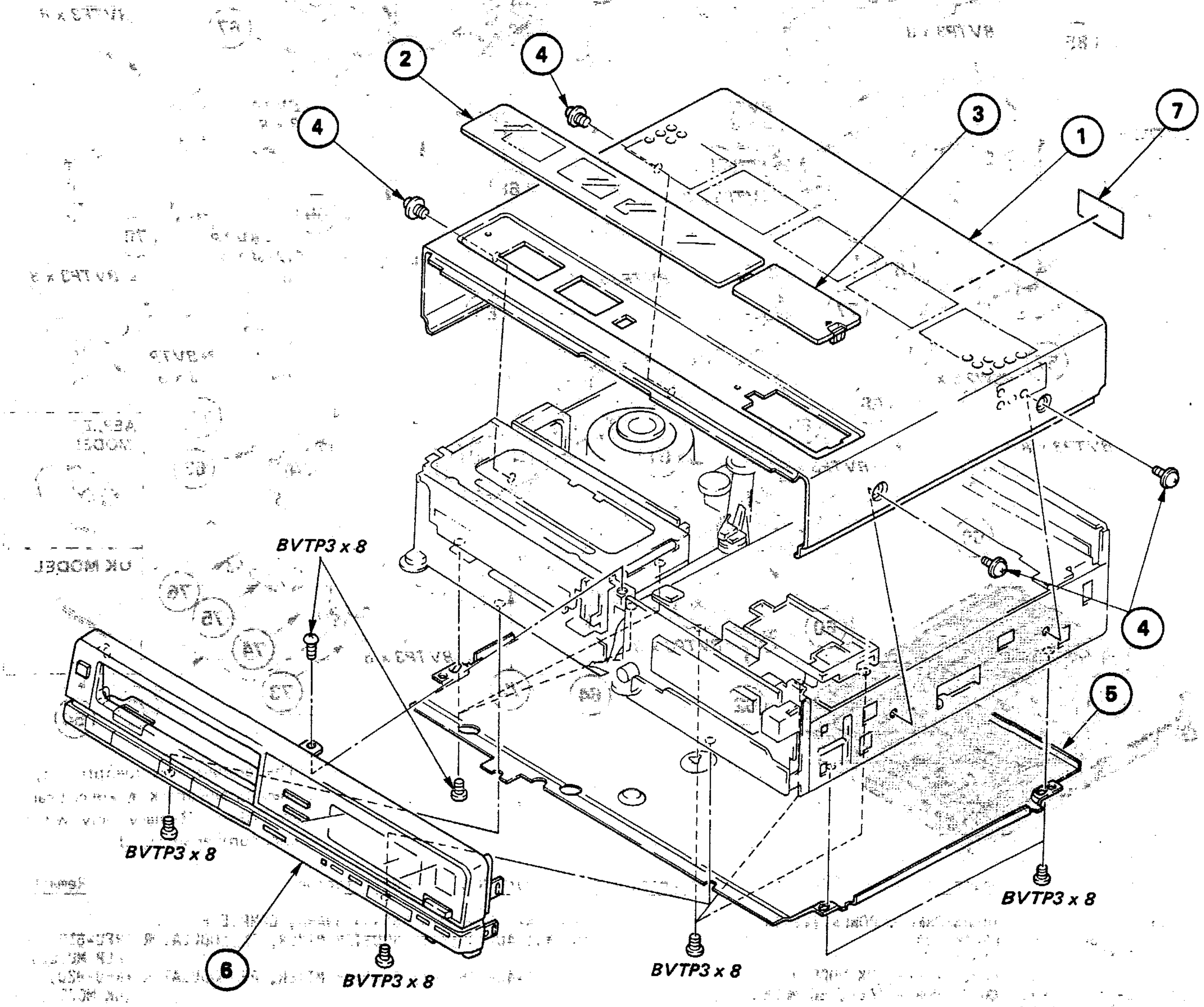
SECTION 5
EXPLODED VIEWS

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

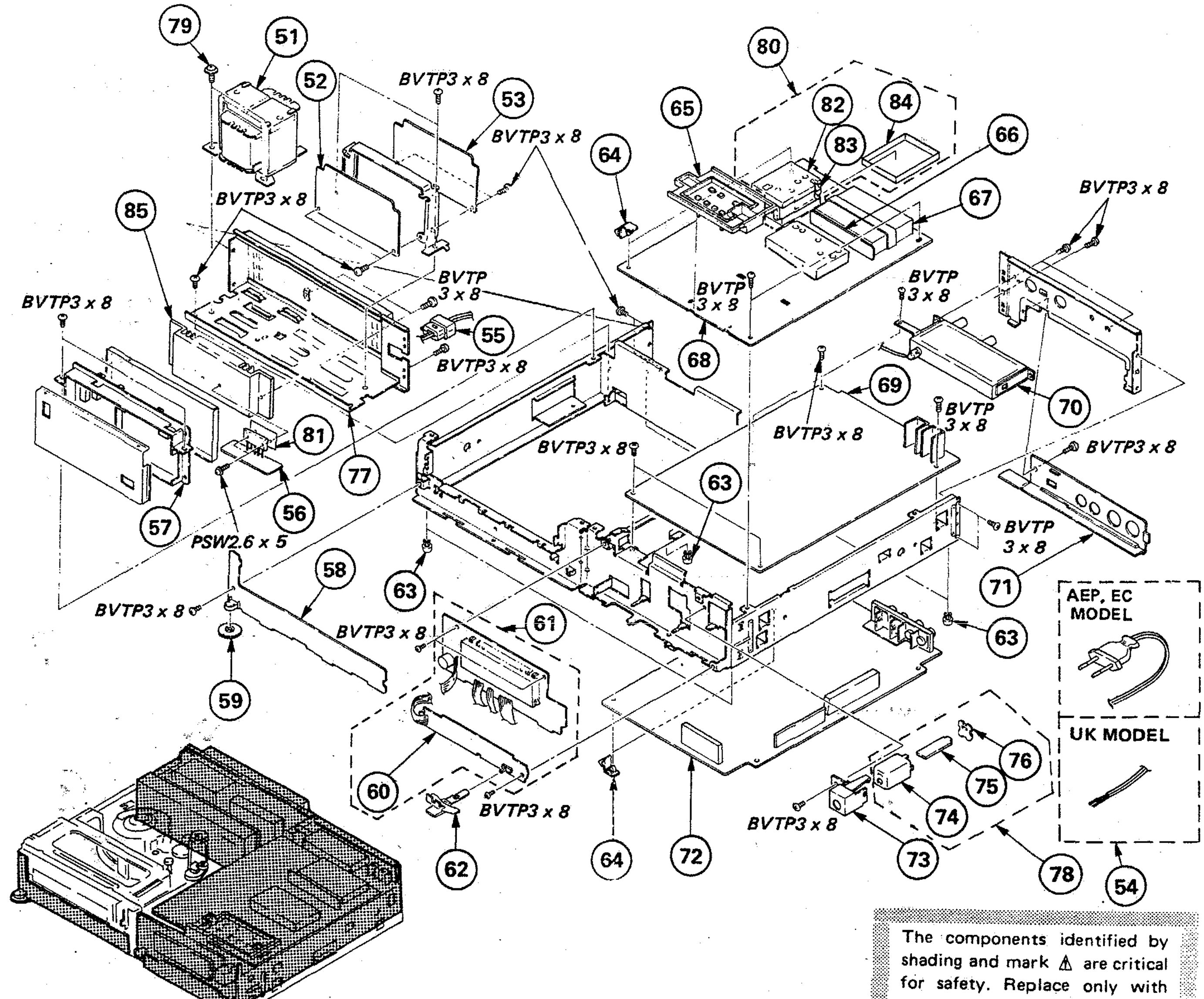
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-1. FRONT PANEL AND CABINET ASSEMBLIES



No.	Part No.	Description	Remark
1	X-3687-504-1	CASE ASSY, UPPER (AEP, UK, EC MODEL/GRAY)	2
	X-3687-512-1	CASE ASSY, UPPER (EC MODEL/BLUE)	2
	X-3687-517-1	CASE ASSY, UPPER (EC MODEL/RED)	2
	X-3687-519-1	CASE ASSY, UPPER (EC MODEL/WHITE)	2
	X-3687-521-1	CASE ASSY, UPPER (AEP, E, EC/SILVER)	2
2	3-684-184-01	PLATE, TRANSPARENT	
3	X-3684-146-1	LID ASSY, PRESET	
4	4-886-821-01	SCREW, M3 CASE (GRAY MODEL)	
	4-886-821-11	SCREW, M3 CASE (SILVER, WHITE, RED, BLUE MODEL)	
5	*X-3684-133-1	PLATE ASSY, BOTTOM	
6	X-3687-513-1	PANEL ASSY, FRONT (EC MODEL/BLUE)	
	X-3687-514-1	PANEL ASSY, FRONT (EC MODEL/RED)	
	X-3687-515-1	PANEL ASSY, FRONT (EC MODEL/WHITE)	
	X-3687-516-1	PANEL ASSY, FRONT (AEP, E, EC MODEL/SILVER)	
	X-3687-523-1	PANEL ASSY, FRONT (AEP, UK, EC MODEL/GRAY)	
7	*3-687-502-01	LABEL, MODEL NUMBER (UK MODEL)	
	*3-687-503-01	LABEL, MODEL NUMBER (EC MODEL)	
	*3-687-553-01	LABEL, MODEL NUMBER (E MODEL)	
	*3-688-403-01	LABEL, MODEL NUMBER (AEP MODEL)	

5-2-1. TUNER, TIMER AND POWER ASSEMBLIES (AEP, UK, EC MODEL)


79
51
52
BVTP3 x 8
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BVTP3 x 8
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80
65
82
84
83
66
67
BVTP3 x 8
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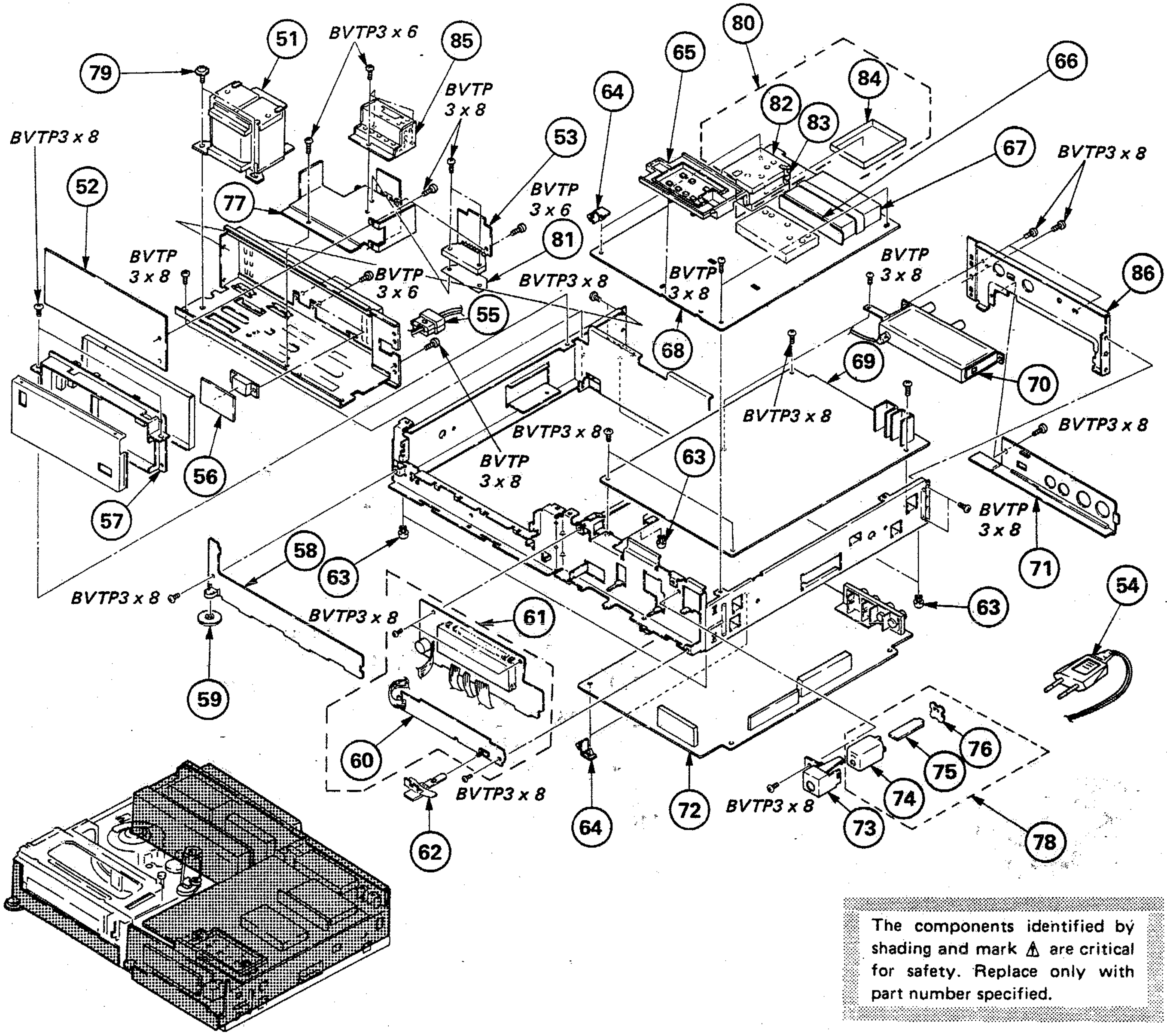
BVTP3 x 8
BVTP3 x 8
BVTP 3 x 8
55
BVTP3 x 8
BVTP 3 x 8
68
BVTP 3 x 8
69
BVTP 3 x 8
70
BVTP3 x 8
81
77
BVTP3 x 8
63
BVTP3 x 8
56
57
PSW2.6 x 5
BVTP 3 x 8
71
58
63
BVTP3 x 8
61
BVTP3 x 8
63
AEP, EC MODEL
59
UK MODEL
76
75
60
BVTP3 x 8
74
BVTP3 x 8
62
64
72
73
78
54

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
51	⚠.1-447-894-11	TRANSFORMER, POWER (T901)	
52	*1-613-228-12	PS-46 BOARD	
53	*1-613-227-12	PS-45 BOARD	
54	⚠.1-551-884-12	CORD, POWER (UK MODEL)	
	⚠.1-551-908-41	CORD, POWER (AEP, EC MODEL)	
55	⚠.3-703-244-02	BUSHING, CORD	
56	*1-613-940-12	PS-69 BOARD	
57	*A-6711-565-A	RP-20 BOARD, COMPLETE	
58	*1-613-231-12	FU-25 BOARD	
59	3-684-103-12	KNOB, TRACK CONTROL	
60	*1-613-230-12	TM-58 BOARD	
61	*A-6707-464-A	TM BOARD, COMPLETE (EC MODEL)	60
	*A-6707-468-A	TM BOARD, COMPLETE (AEP, UK MODEL)	
62	3-684-270-11	BUTTON, SELECTION, INPUT	
63	3-670-155-11	LEG	
64	*3-701-832-00	HINGE, CIRCUIT BOARD	
65	X-3687-501-1	COVER ASSY, PRESET	
66	*1-613-234-11	MT-10 BOARD	
67	⚠.1-463-350-12	TUNER, ET (BT-881) (AEP MODEL)	
	⚠.1-463-371-12	TUNER, ET (BT-882) (UK MODEL)	
	⚠.1-463-421-11	TUNER, ET (BT-883) (EC MODEL)	
68	*A-6721-219-A	TA-22 BOARD, COMPLETE (EC MODEL)	66,67,80
	*A-6721-220-A	TA-22 BOARD, COMPLETE (AEP, UK MODEL)	66,67,80
69	*A-6715-239-A	SS-34 BOARD, COMPLETE	
70	⚠.1-464-386-11	BOOSTER MIXER, RF MODULATOR (RFU-819) (AEP MODEL)	
	⚠.1-464-387-11	BOOSTER MIXER, RF MODULATOR (RFU-820) (UK MODEL)	
	⚠.1-464-388-11	BOOSTER MIXER, RF MODULATOR (RFU-821) (EC MODEL)	
71	*3-687-535-01	PLATE, CONNECTOR	
72	*A-6711-566-A	YC-31 BOARD, COMPLETE	
73	*3-684-182-01	FRAME, FITTING, RAY CATCHER	
74	*4-342-117-00	CASE, SHIELD (MAIN), R	
75	*1-606-794-00	N BOARD	
76	*4-342-118-00	LID, SHIELD CASE, R	
77	X-3687-502-1	FRAME ASSY, POWER	
78	A-6734-213-A	CATCHER BLOCK ASSY, RAY	74-76
79	4-886-821-11	SCREW, M3 CASE	
80	*X-3687-527-1	LID ASSY, BOTTOM, SHIELD CASE, AU	82-84
81	3-687-589-01	SHEET, RADIATION	
82	*3-687-550-01	CASE (UPPER LID), SHIELD, AU	
83	*3-687-558-01	CASE (MAIN), SHIELD, AU	
84	*3-687-559-01	CASE (BOTTOM LID), SHIELD, AU	
85	*3-687-588-01	HEAT SINK(K) (AEP, UK, EC MODEL)	

5-2-2. TUNER, TIMER AND POWER ASSEMBLIES (E MODEL)



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BVTP3 x 6
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79
BVTP 3 x 8
BVTP3 x 8
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BVTP 3 x 6
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BVTP 3 x 8
BVTP 3 x 6
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BVTP3 x 8
56
57
80
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84
82
83
66
67
BVTP3 x 8
BVTP 3 x 8
BVTP 3 x 8
86
68
69
70
BVTP3 x 8
BVTP3 x 8
BVTP 3 x 8
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BVTP3 x 8
BVTP 3 x 8
71
54
58
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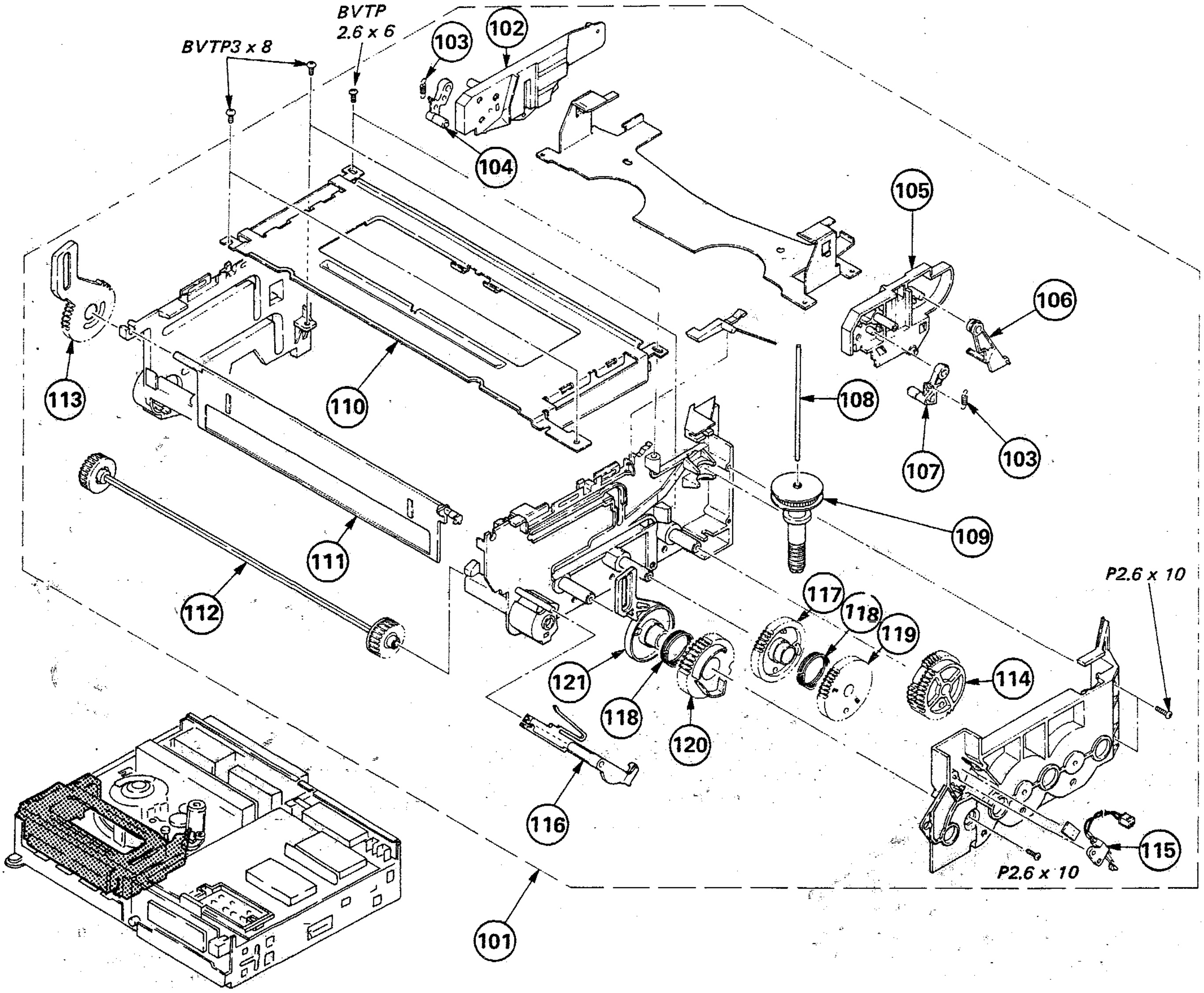
BVTP3 x 8
BVTP3 x 8
61
63
59
60
62
BVTP3 x 8
64
72
BVTP3 x 8
73
74
75
76
78

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
51	⚠.1-447-985-11	TRANSFORMER, POWER (T901)	
52	*A-6729-106-A	PS-67 BOARD, COMPLETE	
53	*1-614-195-12	PS-76 BOARD	
54	⚠.1-551-908-11	CORD, POWER	
55	⚠.3-703-244-02	BUSHING, CORD	
56	*1-614-196-12	VS-4 BOARD	
57	*A-6711-565-A	RP-20 BOARD, COMPLETE	
58	*1-613-231-12	FU-25 BOARD	
59	3-684-103-11	KNOB, TRACK CONTROL	
60	*1-613-230-11	TM-58 BOARD	
61	*A-6707-468-A	TM BOARD, COMPLETE	60
62	3-684-270-11	BUTTON, SELECTION, INPUT	
63	3-670-155-11	LEG	
64	*3-701-832-00	HINGE, CIRCUIT BOARD	
65	X-3687-501-1	COVER ASSY, PRESET	
66	*1-613-234-11	MT-10 BOARD	
67	⚠.1-463-350-12	TUNER, ET (BT-881)	
68	*A-6721-222-A	TA-22 BOARD, COMPLETE	66, 67, 80
69	*A-6715-239-A	SS-34 BOARD, COMPLETE	
70	⚠.1-464-386-21	BOOSTER MIXER, RF MODULATOR (RFU-819)	
71	*3-687-535-01	PLATE, CONNECTOR	
72	*A-6711-578-A	YC-31 BOARD, COMPLETE	
73	*3-684-182-01	FRAME, FITTING, RAY CATCHER	
74	*4-342-117-00	CASE, SHIELD (MAIN), R	
75	*1-606-794-00	N BOARD	
76	*4-342-118-00	LID, SHIELD CASE, R	
77	*3-687-595-01	HEAT SINK	
78	A-6734-213-A	CATCHER BLOCK ASSY, RAY	74-76
79	4-886-821-11	SCREW, M3 CASE	
80	*X-3687-527-1	LID ASSY, BOTTOM, SHIELD CASE, AU	82-84
81	3-687-592-01	SHEET, RADIATION	
82	*3-687-550-01	CASE (UPPER LID), SHIELD, AU	
83	*3-687-558-01	CASE (MAIN), SHIELD, AU	
84	*3-687-559-01	CASE (BOTTOM LID), SHIELD, AU	
85	*3-687-541-02	CASE, SHIELD	
86	*3-687-594-01	PLATE, JACK	

5-3. FRONT LOADING ASSEMBLY


BVTP3 x 8
BVTP
2.6 x 6
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P2.6 x 10
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P2.6 x 10
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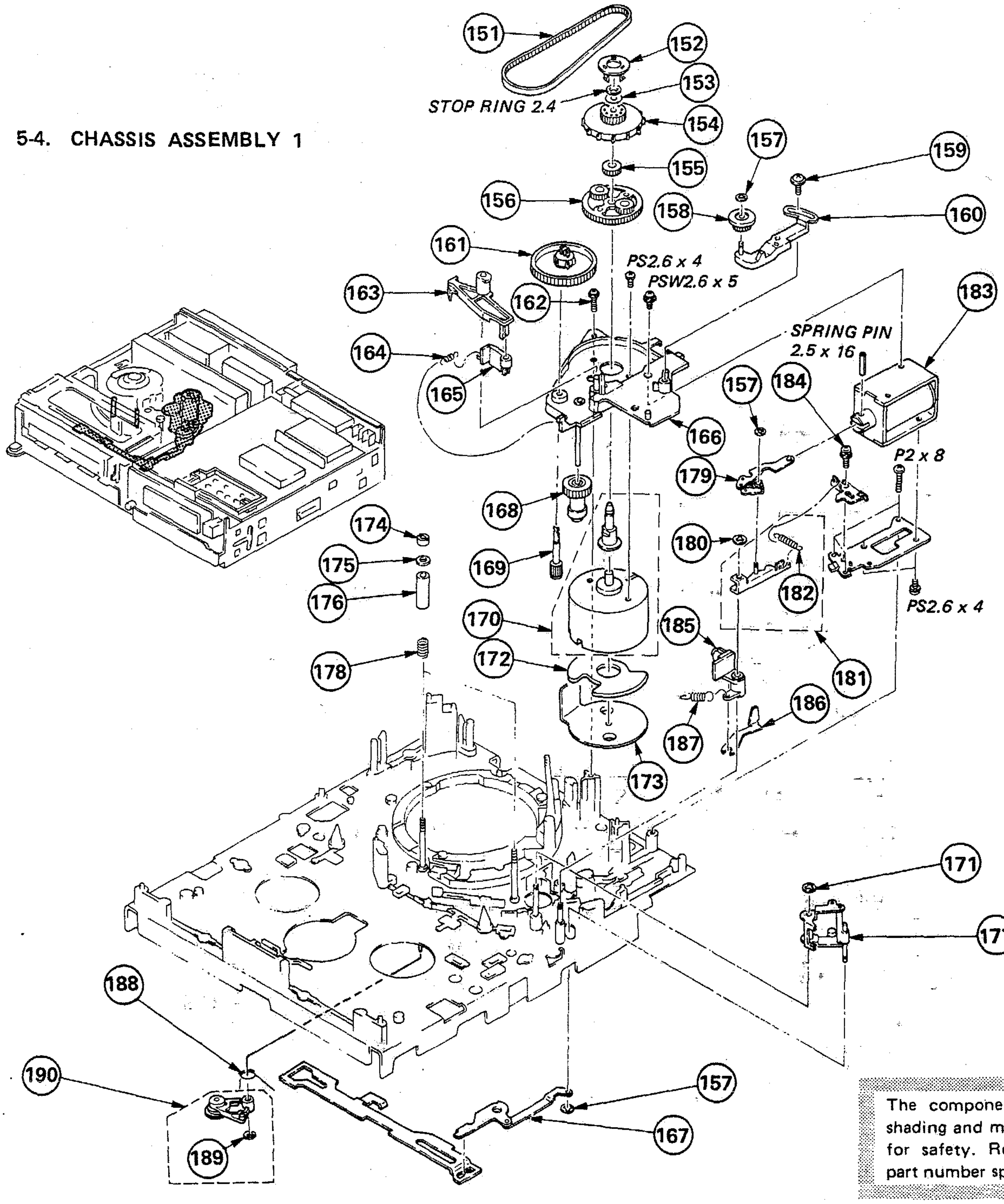
No.	Part No.	Description	Remark
101	A-6751-186-A	LOADING BLOCK ASSY, FRONT	102-121
102	*X-3684-117-1	PLATE ASSY, SIDE, BASE (LEFT)	
103	3-684-258-01	SPRING, TENSION	
104	X-3684-125-1	RETAINER (LEFT) ASSY, CASSETTE	
105	*X-3684-118-1	PLATE ASSY, SIDE, RIGHT	
106	*3-684-108-01	ARM, LID OPEN	
107	X-3684-124-1	RETAINER (RIGHT) ASSY, CASSETTE	
108	3-679-123-00	SHAFT, GEAR, WORM	
109	3-684-164-01	GEAR, WORM	
110	*3-684-195-01	PLATE, TOP	
111	3-684-168-01	DOOR	
112	X-3684-116-1	SHAFT ASSY, MIDWAY GEAR	
113	*3-684-166-01	ARM (LEFT), DRIVING	
114	X-3684-123-1	GEAR ASSY, DRIVING	
115	1-554-840-11	SWITCH, LEAF (CASSETTE ON)(S904)	
116	3-684-162-01	ARM, SWITCHING, DOOR	
117	3-684-111-01	GEAR (B), LIMITER	
118	3-684-115-01	SPRING	
119	3-684-109-01	GEAR (A), LIMITER	
120	3-684-163-01	GEAR, DRIVING ARM	
121	3-684-165-01	ARM (RIGHT), DRIVING	

5-4. CHASSIS ASSEMBLY 1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STOP RING 2.4
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PS2.6 x 4
PSW2.6 x 5
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183
SPRING PIN
2.5 x 16
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P2 x 8
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PS2.6 x 4
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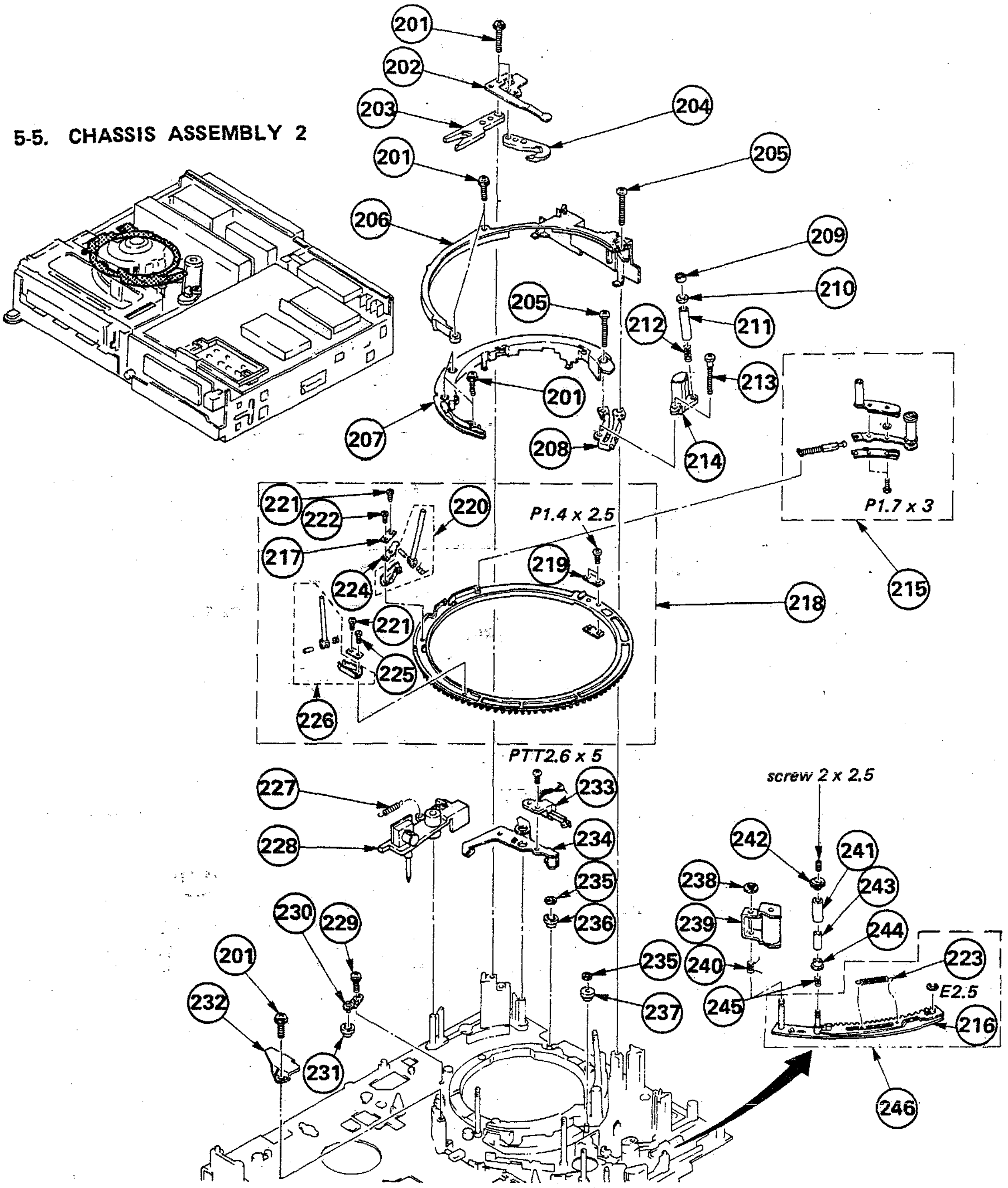
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
151	3-684-264-01	BELT, TIMING	
152	3-684-152-01	FLANGE, INTERNAL GEAR	
153	3-683-454-01	WASHER, POLYETHYLENE	
154	3-684-178-01	GEAR, INTERNAL	
155	3-679-104-05	GEAR	
156	X-3679-111-0	CARRIER ASSY	
157	3-669-465-00	WASHER (1.5), STOPPER	
158	3-684-151-01	GEAR	
159	3-681-231-00	SCREW (+PW 2.6X8), TAPPING	
160	X-3684-119-1	ARM ASSY, GEAR	
161	3-679-115-00	GEAR (LARGE), LOADING	
162	3-669-480-11	+ PTPWH 2	
163	3-684-167-01	ARM, STOPPER	
164	3-684-227-01	SPRING, TENSION	
165	3-684-116-01	LIMITER, STOPPER	
166	X-3684-129-1	CHASSIS ASSY, PLANET GEAR	
167	*X-3684-114-1	LEVER ASSY, COMMUNICATION	
168	X-3669-321-0	GEAR (C) ASSY	
169	3-679-114-00	GEAR (SMALL), LOADING	
170	X-3679-268-1	MOTOR ASSY, L (LOADING/THREADING)(MS04)	
171	3-669-596-00	WASHER (2.3), STOPPER	
172	*1-605-071-00	LM-8 BOARD	
173	*3-669-613-00	INSULATOR, L MOTOR	
174	3-669-318-21	NUT, ADJUSTMENT, GUIDE	
175	3-684-135-01	WASHER (UPPER), GUIDE, #7, 8	
176	3-684-133-01	SLEEVE, GUIDE, #7, 8	
177	X-3684-113-1	ARM ASSY, PINCH PRESS	
178	3-684-290-01	SPRING, COMPRESSION	
179	X-3684-109-1	ARM ASSY, PINCH SOLENOID	
180	3-669-595-00	WASHER (2), STOPPER	
181	*X-3684-112-1	ARM ASSY, PINCH LIMITER	182
182	3-515-170-00	SPRING, TENSION	
183	⚠1-454-349-41	SOLENOID, PLUNGER (PINCH)(PM901)	
184	3-669-607-00	+PSW (SMALL ROUND) 2.6	
185	1-464-329-31	SENSOR, T COIL (L902)	
186	*3-684-119-01	LINK, TAKE-UP SENSOR	
187	3-684-157-04	SPRING (T SENSOR), TENSION	
188	3-681-154-00	SPRING, TORSION	
189	3-701-436-11	WASHER, 1.6	
190	X-3687-503-1	ARM ASSY, REVIEW BRAKE	189

5-5. CHASSIS ASSEMBLY 2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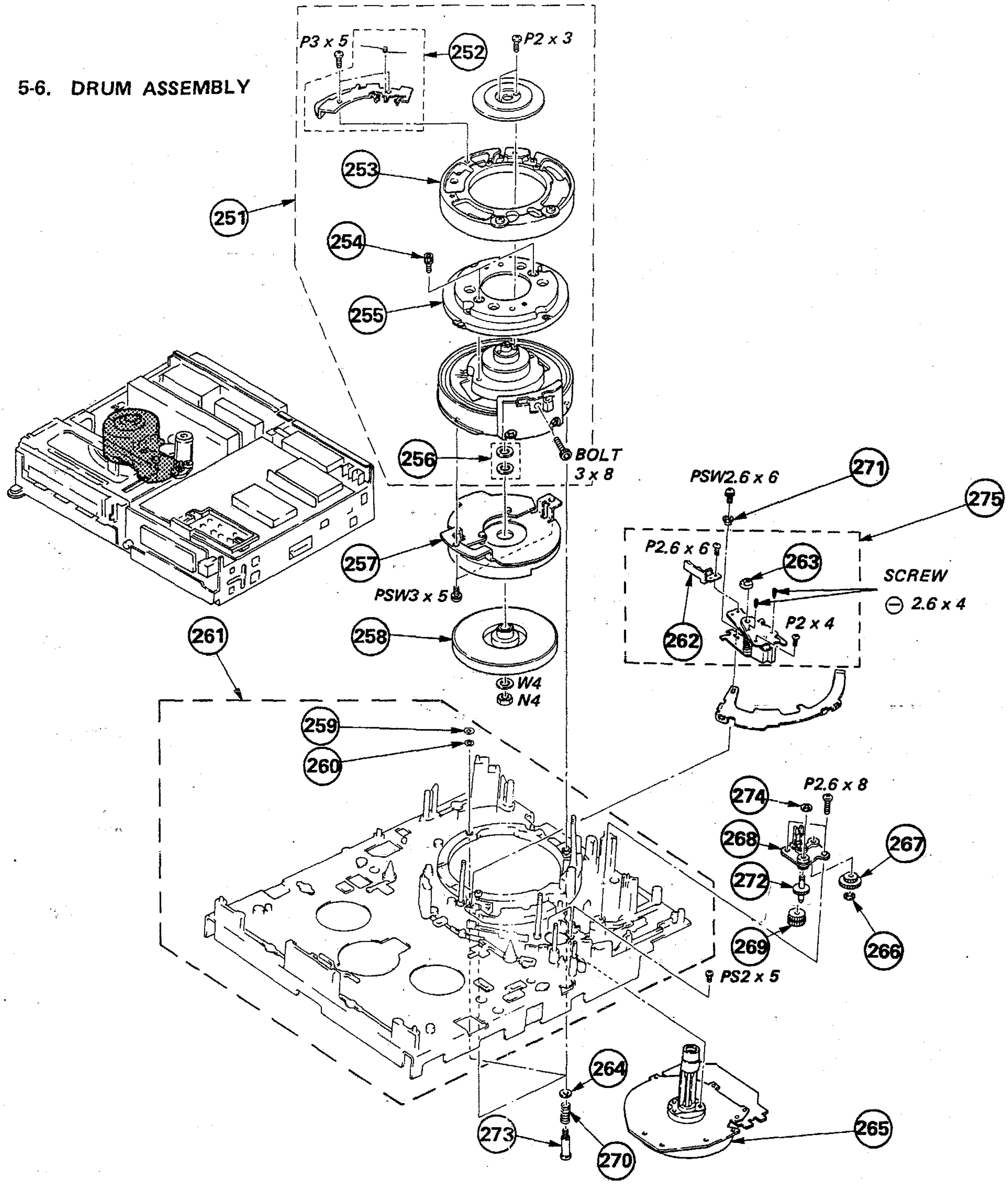
P1.4 x 2.5
P1.7 x 3
PTT2.6 x 5
screw 2 x 2.5
E2.5

No.	Part No.	Description	Remark
201	3-669-480-11	+ PTPWH 2	
202	*3-684-158-01	PLATE, GROUND, TAPE GUIDE	
203	*3-669-618-00	PLATE (2), ADJUST	
204	*3-672-507-00	PLATE (3-1), ADJUSTMENT	
205	3-669-466-21	SCREW (M 2.6)	
206	3-684-217-01	GUIDE (2), SHUTTLE	
207	*3-679-290-00	GUIDE (1-YA), SHUTTLE	
208	*X-3679-263-1	BASE ASSY, SLANT	
209	3-669-446-00	NUT, GUIDE, NO. 6	
210	3-679-910-00	FLANGE (S), GUIDE, NUMBER 6	
211	3-669-445-00	SPACER, GUIDE, NO. 6	
212	3-669-615-00	SPRING, COMPRESSION	
213	3-669-606-00	SCREW (2.6)	
214	8-825-508-10	HEAD, FE (FULL ERASE HEAD)	
215	A-6750-158-B	SHUTTLE (2) BLOCK ASSY	
216	*X-3679-265-1	SLIDER ASSY (2), T	
217	*3-669-472-02	RETAINER, SPRING, LEAF	
218	X-3679-150-0	RING (YA) ASSY, S LOADING	217, 219-222 224-226
219	*3-669-616-00	RETAINER	
220	*X-3669-430-0	HOLDER BLOCK ASSY, #3 GUIDE	
221	3-669-478-00	SCREW (1X3), TAPPING	
222	3-669-479-11	SCREW (1.4X3.5), TAPPING	
223	3-549-014-00	SPRING, TENSION	
224	3-672-583-00	SPRING	
225	3-672-586-00	SCREW (1.4X3), TAPPING	
226	*X-3669-429-0	HOLDER BLOCK ASSY, #2 GUIDE	
227	3-684-161-01	SPRING (S SENSOR), TENSION	
228	1-464-330-11	SENSOR, S COIL (L901)	
229	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
230	*X-3669-329-0	PLATE ASSY, ADJUSTMENT	
231	3-669-360-00	ROLLER, RING	
232	3-669-476-04	PLATE, GUIDE	
233	1-554-840-11	SWITCH, LEAF (THREADING END) (S903)	
234	*X-3684-130-1	ARM ASSY, LOCK	
235	3-669-465-00	WASHER (1.5), STOPPER	
236	3-669-630-00	ROLLER (C), RING	
237	3-669-597-00	ROLLER (B), RING	
238	3-669-596-00	WASHER (2.3), STOPPER	
239	X-3679-264-1	ARM ASSY, PINCH ROLLER	
240	3-683-441-01	SPRING	
241	3-676-649-11	ROLLER (#9), GUIDE	
242	3-676-650-00	FLANGE (UPPER) (#9), GUIDE	
243	3-672-559-00	SLEEVE, GUIDE	
244	3-672-558-00	FLANGE (LOWER) (#9), GUIDE	
245	3-669-452-00	SPRING, COMPRESSION	
246	A-6750-165-A	GEAR ASSY, SLIDER	216, 223

5-6. DRUM ASSEMBLY


P3 x 5
252
P2 x 3
253
251
254
255
256
BOLT 3 x 8
PSW2.6 x 6
271
275
257
P2.6 x 6
263
SCREW
⊖ 2.6 x 4
PSW3 x 5
258
261
262
P2 x 4
W4
N4
259
260
274
P2.6 x 8
268
267
272
269
266
PS2 x 5
264
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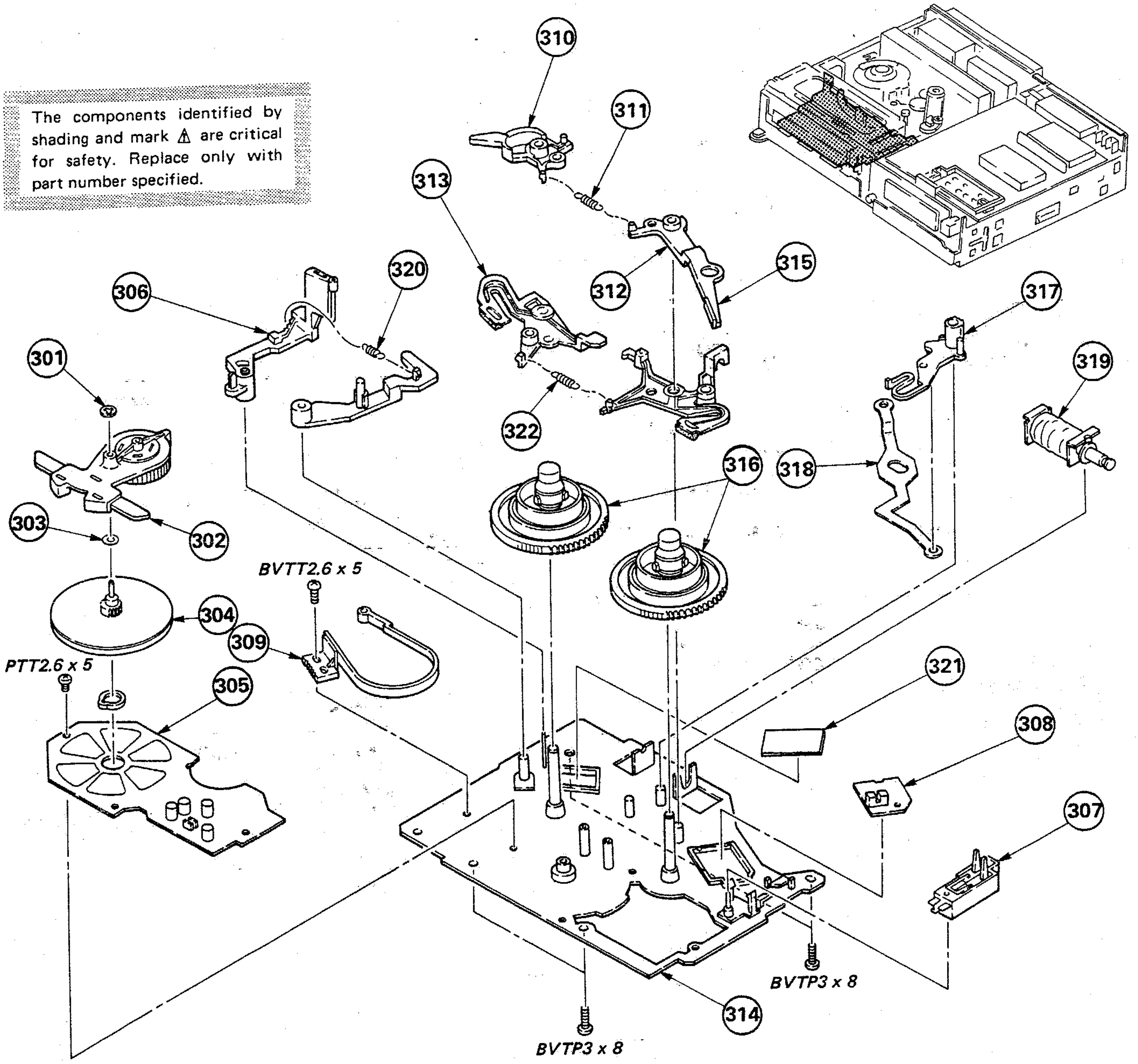
No.	Part No.	Description	Remark
251	A-6050-187-A	DRUM ASSY (DSH-35A-R)	252-256
252	A-6760-066-B	SPRING ASSY, TAPE RETAINER	
253	A-6760-138-A	DRUM ASSY, UPPER	
254	3-669-157-00	BOLT (WASHER)(2.6X8)	
255	A-6762-122-A	DISK ASSY	
256	X-3669-105-0	SPACE BLOCK ASSY	
257	X-2621-204-2	STATOR ASSY, D	
258	X-2621-202-0	ROTOR ASSY, D	
259	3-669-646-00	SPACER, DRUM	
260	3-669-646-11	SPACER, DRUM	
261	*X-3687-505-1	CHASSIS ASSY, MECHANICAL	259, 260
262	3-684-140-01	PROTECTOR	
263	*3-684-246-02	NUT, ADJUSTMENT, HEIGHT, ACE	
264	3-669-600-11	WASHER, FLAT(3.5)	
265	8-838-080-01	MOTOR, DC(BHF-1908B)(CAPSTAN MOTOR)(M902)	
266	3-669-465-00	WASHER (1.5), STOPPER	
267	3-669-337-00	GEAR (D)	
268	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR	
269	3-669-338-00	GEAR (E)	
270	3-429-123-00	SPRING	
271	3-684-247-01	BUSHING, ACE	
272	X-3684-166-1	GEAR(F) ASSY(C)	
273	3-669-302-00	SCREW, FITTING	
274	3-669-595-00	WASHER (2), STOPPER	
275	A-6761-075-A	ACE ASSY	262, 263

5-7. REEL BLOCK ASSEMBLY

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.


310
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322
316
318
303
302
BVTT2.6 x 5
304
309
PTT2.6 x 5
305
321
308
307
BVTP3 x 8
314
BVTP3 x 8

No.	Part No.	Description	Remark
301	3-669-595-00	WASHER (2), STOPPER	
302	A-6759-074-A	ARM BLOCK ASSY, PENDULUM	
303	3-679-318-00	WASHER, PENDULUM ARM	
304	X-2622-201-0	ROTOR ASSY, R	
305	*A-4910-049-A	R STATOR BOARD,COMPLETE(REEL MOTOR)(M903)	
306	X-3684-121-1	LEVER ASSY, TENSION REGULATOR	
307	1-554-839-11	SWITCH, LEAF (2 GANG)(S901) (REC PROOF/CASSETTE DOWN)	
308	*1-613-233-12	RD-21 BOARD	
309	X-3679-120-0	BAND ASSY, TENSION REGULATOR	
310	3-684-192-01	ARM, BRAKE, SUPPLY SOFT	
311	3-684-235-01	SPRING, TENSION	

No.	Part No.	Description	Remark
312	X-3684-137-1	BRAKE ASSY, T SOFT	
313	X-3684-107-1	BRAKE ASSY, SUPPLY	
314	*X-3684-131-1	CHASSIS ASSY, SUB	
315	X-3684-108-1	BRAKE ASSY, TAKE-UP	
316	X-3684-106-1	TABLE ASSY, REEL	
317	3-684-193-01	ARM, PENDULUM STOPPER	
318	*3-684-183-01	LINK, L	
319	⚠1-454-371-31	SOLENOID, PLUNGER (BRAKE)(PM902)	
320	3-679-151-00	SPRING, TENSION	
321	*1-613-232-12	RD-20 BOARD	
322	3-685-772-01	SPRING, TENSION	

5-8. HARDWARE LIST

SCREW

7-621-770-67	SCREW +P 2.6X6
7-621-759-35	+PSW, 2.6X5
7-621-759-85	+PSW, 2.6X12
7-621-759-95	+PSW, 2.6X14
7-627-551-28	SCREW, PRECISION +P 1.4X2.5
7-627-552-38	SCREW, PRECISION +P 1.7X3
7-627-553-18	SCREW, PRECISION +P 2X2
7-627-553-47	SCREW, PRECISION +P 2X4
7-628-253-15	SCREW +PS 2X5
7-628-253-95	SCREW +PS 2.6X4
7-628-254-15	SCREW +PS 2.6X6
7-682-548-04	SCREW +P 3X8
7-685-134-14	SCREW +P 2.6X8 TYPE2 NON-SLIT
7-685-135-14	SCREW +P 2.6X10 TYPE2 NON-SLIT
7-685-645-71	SCREW +BVTP 3X6 TYPE2 IT-3
7-685-645-81	SCREW +BVTP 3X6 TYPE2
7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-81	SCREW +BVTP 3X8 TYPE2
7-685-646-89	SCREW +BVTP 3X8 TYPE2
7-685-648-71	SCREW +BVTP 3X12 TYPE2 IT-3
7-685-648-81	SCREW +BVTP 3X12 TYPE2
7-685-790-04	SCREW +PTT 2.6X4 (S)
7-685-791-04	SCREW +PTT 2.6X5 (S)
7-685-791-04	SCREW +BVTT 2.6X5 (S)

SET-SCREW

7-621-710-25	SET-SCREW, SLOT 2X3 CONE POINT
7-621-731-08	SET-SCT, HEX. 2X2.5, FLAT POINT
7-621-732-08	SET-SCT, HEX. 2X3 FLAT POINT
7-683-174-21	SET-SCREW, SLOT 3X4 CONE POINT

RING

7-624-118-01	RING, RETAINING E-2.5
7-624-190-61	STOP RING 2.4, TYPE-CS

TAPPING

7-685-105-14	TPG +P 2X8, TYPE 2, NON-SLIT

R STATOR | TM

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- MF : μF, PF : μμF

COILS

- MMH : mH, UH : μH

Ref.No	Part No.	Description			Remark
	*A-4910-049-A	R STATOR BOARD, COMPLETE (REEL MOTOR) ***************************************			
	*1-560-460-00	PIN, CONNECTOR 4P			
		CAPACITOR			
C1	1-123-821-00	ELECT	47MF	20%	16V
C2	1-123-821-00	ELECT	47MF	20%	16V
C3	1-123-821-00	ELECT	47MF	20%	16V
C4	1-123-821-00	ELECT	47MF	20%	16V
		DIODE			
D1	8-719-941-48	DIODE 1N4148TP			
		IC			
IC1	8-759-108-77	IC CX877			
		TRANSISTOR			
Q1	8-729-100-01	TRANSISTOR 2SD992-N			
Q2	8-729-100-01	TRANSISTOR 2SD992-N			
Q3	8-729-100-01	TRANSISTOR 2SD992-N			
Q4	8-729-100-01	TRANSISTOR 2SD992-N			
Q5	8-729-100-01	TRANSISTOR 2SD992-N			
Q6	8-729-100-01	TRANSISTOR 2SD992-N			
		RESISTOR			
R1	1-247-823-00	CARBON	470	5%	1/6W
R2	1-247-823-00	CARBON	470	5%	1/6W
R3	1-247-823-00	CARBON	470	5%	1/6W
R4	1-247-829-00	CARBON	820	5%	1/6W
R5	1-247-871-00	CARBON	47K	5%	1/6W
R6	1-247-871-00	CARBON	47K	5%	1/6W
R7	1-247-871-00	CARBON	47K	5%	1/6W
R8	1-247-871-00	CARBON	47K	5%	1/6W
		DIODE			
S1	8-719-810-31	DIODE THS103-1			
S2	8-719-810-31	DIODE THS103-1			
**					
	*A-6707-464-A	TM BOARD, COMPLETE (EC MODEL) *******************************			
	*A-6707-468-A	TM BOARD, COMPLETE (AEP, E, UK MODEL) **************************************			
		CAPACITOR			
C001	1-123-382-00	ELECT	3.3MF	20%	50V
C003	1-125-299-00	DOUBLE LAYERS	47000MF		5.5V
C004	1-161-773-00	CERAMIC	0.1MF	20%	25V
C005	1-102-525-00	CERAMIC	68PF	5%	50V
C006	1-102-852-00	CERAMIC	47PF	5%	50V
C008	1-123-357-00	ELECT	22MF	20%	50V
C009	1-161-055-00	CERAMIC	0.022MF	10%	50V
C010	1-161-055-00	CERAMIC	0.022MF	10%	50V
C011	1-161-773-00	CERAMIC	0.1MF	20%	25V
C012	1-123-308-00	ELECT	220MF	20%	10V
		DIODE			
D001	8-719-812-31	DIODE TLR123			
D002	8-719-911-19	DIODE 1SS119			
D003	8-719-911-19	DIODE 1SS119			
D004	8-719-162-07	DIODE RD6.2E-B			
D005	8-719-162-07	DIODE RD6.2E-B			
		FLUORESCENT INDICATOR			
FL001	1-519-322-11	INDICATOR, FLUORESCENT			
		IC			
IC001	8-759-911-09	IC MB88525B-112M			
IC002	8-759-913-41	IC S-8054ALB			
		COIL			
L001	1-407-492-00	MICRO INDUCTOR 1MMH			
L002	1-407-177-XX	MICRO INDUCTOR 470UH			
		TRANSISTOR			
Q001	8-729-245-83	TRANSISTOR 2SC2458			
Q002	8-729-245-83	TRANSISTOR 2SC2458			
Q003	8-729-204-83	TRANSISTOR 2SA1048-GR			
Q004	8-729-900-89	TRANSISTOR DTC144ES			
Q005	8-729-245-83	TRANSISTOR 2SC2458			
		RESISTOR			
R001	1-247-867-00	CARBON	33K	5%	1/6W
R002	1-247-874-00	CARBON	62K	5%	1/6W
R003	1-247-872-00	CARBON	51K	5%	1/6W
R004	1-247-873-00	CARBON	56K	5%	1/6W
R005	1-247-869-00	CARBON	39K	5%	1/6W
R006	1-247-885-00	CARBON	180K	5%	1/6W
R007	1-247-879-00	CARBON	100K	5%	1/6W
R008	1-247-867-00	CARBON	33K	5%	1/6W
R010	1-247-879-00	CARBON	100K	5%	1/6W
R024	1-247-867-00	CARBON	33K	5%	1/6W
R025	1-247-833-00	CARBON	1.2K	5%	1/6W
R026	1-247-883-00	CARBON	150K	5%	1/6W
R027	1-247-883-00	CARBON	150K	5%	1/6W
R028	1-247-883-00	CARBON	150K	5%	1/6W
R029	1-247-883-00	CARBON	150K	5%	1/6W
R030	1-247-883-00	CARBON	150K	5%	1/6W
R031	1-247-883-00	CARBON	150K	5%	1/6W
R032	1-247-883-00	CARBON	150K	5%	1/6W
R033	1-247-883-00	CARBON	150K	5%	1/6W
R034	1-247-883-00	CARBON	150K	5%	1/6W
R035	1-247-883-00	CARBON	150K	5%	1/6W

Ref.No	Part No.	Description				Remark
R036	1-247-883-00	CARBON	150K	5%	1/6W	
R037	1-247-883-00	CARBON	150K	5%	1/6W	
R038	1-247-883-00	CARBON	150K	5%	1/6W	
R039	1-247-883-00	CARBON	150K	5%	1/6W	
R040	1-247-883-00	CARBON	150K	5%	1/6W	
R041	1-247-883-00	CARBON	150K	5%	1/6W	
R042	1-247-883-00	CARBON	150K	5%	1/6W	
R043	1-247-883-00	CARBON	150K	5%	1/6W	
R044	1-247-883-00	CARBON	150K	5%	1/6W	
R045	1-247-839-00	CARBON	2.2K	5%	1/6W	
R046	1-247-827-00	CARBON	680	5%	1/6W	
R047	1-247-847-00	CARBON	4.7K	5%	1/6W	
R048	1-247-863-00	CARBON	22K	5%	1/6W	

VARIABLE RESISTOR

RV001	1-228-749-00	RES, ADJ, CARBON 22K

SWITCH

S002	1-554-174-00	SWITCH, KEY BOARD
S004	1-554-174-00	SWITCH, KEY BOARD
S012	1-554-174-00	SWITCH, KEY BOARD

CERAMIC TRIMMER

TC001	1-141-022-21	CAP, TRIMMER, CERAMIC

CRYSTAL

X001	1-567-098-00	VIBRATOR, CRYSTAL

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*1-613-230-12 TM-58 BOARD
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SWITCH

S003	1-554-174-00	SWITCH, KEY BOARD
S005	1-554-174-00	SWITCH, KEY BOARD
S006	1-554-174-00	SWITCH, KEY BOARD
S007	1-554-174-00	SWITCH, KEY BOARD
S008	1-554-174-00	SWITCH, KEY BOARD
S009	1-554-174-00	SWITCH, KEY BOARD
S010	1-554-174-00	SWITCH, KEY BOARD
S011	1-554-174-00	SWITCH, KEY BOARD
S013	1-554-837-11	SWITCH, SLIDE

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*A-6711-565-A RP-20 BOARD, COMPLETE
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*3-687-522-01 LID, BOTTOM, SHIELD CASE, RP
*3-687-533-01 CASE (MAIN), SHIELD, RP

CAPACITOR

Ref.No	Part No.	Description				Remark
C503	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C504	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C505	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C506	1-123-318-00	ELECT	33MF	20%	10V	
C510	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C511	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C512	1-102-953-00	CERAMIC	18PF	5%	50V	
C513	1-102-953-00	CERAMIC	18PF	5%	50V	
C514	1-123-381-00	ELECT	2.2MF	20%	50V	
C515	1-161-047-00	CERAMIC	0.0047MF	10%	25V	
C516	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C517	1-123-356-00	ELECT	10MF	20%	16V	
C518	1-102-953-00	CERAMIC	18PF	5%	50V	
C519	1-161-013-00	CERAMIC	0.01MF	20%	25V	
C520	1-161-013-00	CERAMIC	0.01MF	20%	25V	
C521	1-123-356-00	ELECT	10MF	20%	16V	
C522	1-102-114-00	CERAMIC	470PF	10%	50V	
C523	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C524	1-161-055-00	CERAMIC	0.022MF	10%	25V	
C525	1-102-953-00	CERAMIC	18PF	5%	50V	
C526	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C527	1-161-773-00	CERAMIC	0.1MF	20%	25V	
C529	1-123-380-00	ELECT	1MF	20%	50V	
C532	1-123-380-00	ELECT	1MF	20%	50V	
C536	1-102-942-00	CERAMIC	5PF	0.5PF	50V	
C539	1-161-013-00	CERAMIC	0.01MF	20%	25V	
C542	1-161-013-00	CERAMIC	0.01MF	20%	25V	
C543	1-123-332-00	ELECT	47MF	20%	16V	
C544	1-123-332-00	ELECT	47MF	20%	16V	
C545	1-161-013-00	CERAMIC	0.01MF	20%	25V	
C546	1-131-500-51	TANTALUM	2.2MF	20%	16V	
C550	1-161-013-00	CERAMIC	0.01MF	20%	25V	
C553	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C554	1-102-128-00	CERAMIC	0.0082MF	10%	50V	

CONNECTOR

CN501	*1-508-848-00	PIN, CONNECTOR 6P
CN502	*1-564-031-00	PIN, CONNECTOR 6P
CN503	*1-508-846-00	PIN, CONNECTOR 8P
CN504	*1-508-845-00	PIN, CONNECTOR 6P

IC

IC501	8-758-620-00	IC CX862
IC503	8-751-340-00	IC CX134A

COIL

L502	1-408-030-00	MICRO INDUCTOR 0.68UH
L504	1-408-030-00	MICRO INDUCTOR 0.68UH
L505	1-408-158-00	MICRO INDUCTOR 6.8MMH
L506	1-408-414-00	MICRO INDUCTOR 27UH
L507	1-408-158-00	MICRO INDUCTOR 6.8MMH
L508	1-408-414-00	MICRO INDUCTOR 27UH
L509	1-408-417-00	MICRO INDUCTOR 47UH
L512	1-408-454-00	MICRO INDUCTOR 100UH

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
L513	1-407-717-00	MICRO INDUCTOR 1MMH	
L516	1-408-422-00	MICRO INDUCTOR 120UH	
L517	1-407-495-00	MICRO INDUCTOR 1.8MMH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q501	8-729-900-36	TRANSISTOR DTC124ES	
Q502	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q503	8-729-177-43	TRANSISTOR 2SD774	
Q508	8-729-245-83	TRANSISTOR 2SC2458	

RESISTOR

Ref.No	Part No.	Description	Remark
R503	1-247-844-00	CARBON 3.6K 5% 1/6W	
R504	1-247-852-00	CARBON 7.5K 5% 1/6W	
R505	1-247-855-00	CARBON 10K 5% 1/6W	
R506	1-247-831-00	CARBON 1K 5% 1/6W	
R507	1-247-867-00	CARBON 33K 5% 1/6W	
R515	1-247-831-00	CARBON 1K 5% 1/6W	
R517	1-247-824-00	CARBON 510 5% 1/6W	
R518	1-247-824-00	CARBON 510 5% 1/6W	
R519	1-247-779-00	CARBON 6.8 5% 1/6W	
R520	1-247-822-00	CARBON 430 5% 1/6W	
R521	1-247-855-00	CARBON 10K 5% 1/6W	
R522 ⚠	1-212-855-00	FUSIBLE 8.2 5% 1/4W	F
R523	1-247-839-00	CARBON 2.2K 5% 1/6W	
R524	1-247-839-00	CARBON 2.2K 5% 1/6W	
R525	1-247-839-00	CARBON 2.2K 5% 1/6W	
R526	1-247-839-00	CARBON 2.2K 5% 1/6W	
R527	1-247-831-00	CARBON 1K 5% 1/6W	
R528	1-247-831-00	CARBON 1K 5% 1/6W	
R529	1-247-825-00	CARBON 560 5% 1/6W	
R530	1-247-835-00	CARBON 1.5K 5% 1/6W	
R531 ⚠	1-212-855-00	FUSIBLE 8.2 5% 1/4W	F
R533	1-247-847-00	CARBON 4.7K 5% 1/6W	
R534	1-247-839-00	CARBON 2.2K 5% 1/6W	
R535	1-247-849-00	CARBON 5.6K 5% 1/6W	
R536	1-247-849-00	CARBON 5.6K 5% 1/6W	
R537	1-247-809-00	CARBON 120 5% 1/6W	
R540	1-247-819-00	CARBON 330 5% 1/6W	
R543	1-247-819-00	CARBON 330 5% 1/6W	
R545	1-247-844-00	CARBON 3.6K 5% 1/6W	
R546	1-247-844-00	CARBON 3.6K 5% 1/6W	
R547	1-247-828-00	CARBON 750 5% 1/6W	
R548	1-247-807-00	CARBON 100 5% 1/6W	
R549	1-247-831-00	CARBON 1K 5% 1/6W	
R550	1-247-831-00	CARBON 1K 5% 1/6W	
R551	1-247-835-00	CARBON 1.5K 5% 1/6W	
R552	1-247-835-00	CARBON 1.5K 5% 1/6W	
R557	1-247-815-00	CARBON 220 5% 1/6W	
R559	1-247-855-00	CARBON 10K 5% 1/6W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV501	1-228-920-00	RES, ADJ, CARBON 2.2K	
RV502	1-228-920-00	RES, ADJ, CARBON 2.2K	
RV503	1-228-920-00	RES, ADJ, CARBON 2.2K	

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Ref.No	Part No.	Description	Remark
	*A-6711-578-A	YC-31 BOARD, COMPLETE **********************	
	*1-536-870-11	TERMINAL BOARD, CONTROL PANEL	

BAND PASS FILTER

Ref.No	Part No.	Description	Remark
BPF001	1-235-098-00	FILTER, BAND PASS	

CAPACITOR

Ref.No	Part No.	Description	Remark
C002	1-123-356-00	ELECT 10MF 20% 16V	
C010	1-123-356-00	ELECT 10MF 20% 16V	
C011	1-123-356-00	ELECT 10MF 20% 25V	
C020	1-101-004-00	CERAMIC 0.01MF 50V	
C021	1-101-004-00	CERAMIC 0.01MF 50V	
C023	1-101-882-00	CERAMIC 51PF 5% 50V	
C024	1-130-047-00	FILM 180PF 5% 50V	
C025	1-106-172-00	MYLAR 0.001MF 5% 50V	
C026	1-101-059-00	CERAMIC 510PF 5% 50V	
C027	1-161-045-00	CERAMIC 0.0033MF 10% 25V	
C028	1-106-172-00	MYLAR 0.001MF 50V	
C029	1-123-382-00	ELECT 3.3MF 20% 50V	
C031	1-101-004-00	CERAMIC 0.01MF 50V	
C032	1-102-816-00	CERAMIC 120PF 5% 50V	
C033	1-101-004-00	CERAMIC 0.01MF 50V	
C034	1-101-004-00	CERAMIC 0.01MF 50V	
C035	1-102-816-00	CERAMIC 120PF 5% 50V	
C036	1-101-882-00	CERAMIC 51PF 5% 50V	
C037	1-101-004-00	CERAMIC 0.01MF 50V	
C038	1-101-004-00	CERAMIC 0.01MF 50V	
C039	1-101-004-00	CERAMIC 0.01MF 50V	
C048	1-101-004-00	CERAMIC 0.01MF 50V	
C049	1-101-004-00	CERAMIC 0.01MF 50V	
C050	1-102-865-00	CERAMIC 8PF 0.5PF 50V	
C051	1-102-525-00	CERAMIC 68PF 5% 50V	
C052	1-102-525-00	CERAMIC 68PF 5% 50V	
C053	1-123-380-00	ELECT 1MF 20% 50V	
C054	1-161-040-00	CERAMIC 0.0012MF 10% 25V	
C055	1-123-380-00	ELECT 1MF 20% 50V	
C056	1-102-962-00	CERAMIC 30PF 5% 50V	
C057	1-102-981-00	CERAMIC 300PF 5% 50V	
C058	1-123-306-00	ELECT 47MF 20% 10V	
C059	1-101-004-00	CERAMIC 0.01MF 50V	
C060	1-108-579-00	MYLAR 0.01MF 5% 50V	
C061	1-123-382-00	ELECT 3.3MF 20% 50V	
C062	1-123-306-00	ELECT 47MF 20% 10V	
C063	1-101-004-00	CERAMIC 0.01MF 50V	
C064	1-102-521-00	CERAMIC 43PF 5% 50V	
C065	1-102-527-00	CERAMIC 82PF 5% 50V	
C066	1-102-518-00	CERAMIC 33PF 5% 50V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C067	1-161-025-00	CERAMIC	0.1MF	10%	25V
C068	1-101-004-00	CERAMIC	0.01MF		50V
C069	1-102-962-00	CERAMIC	30PF	5%	50V
C070	1-101-004-00	CERAMIC	0.01MF		50V
C071	1-123-380-00	ELECT	1MF	20%	50V
C072	1-101-004-00	CERAMIC	0.01MF		50V
C073	1-102-525-00	CERAMIC	68PF	5%	50V
C074	1-102-525-00	CERAMIC	68PF	5%	50V
C075	1-101-004-00	CERAMIC	0.01MF		50V
C076	1-102-951-00	CERAMIC	15PF	5%	50V
C077	1-123-330-00	ELECT	22MF	20%	16V
C078	1-123-330-00	ELECT	22MF	20%	16V
C080	1-101-004-00	CERAMIC	0.01MF		50V
C082	1-161-024-00	CERAMIC	0.082MF	10%	25V
C083	1-102-977-00	CERAMIC	200PF	5%	50V
C084	1-123-369-00	ELECT	4.7MF	20%	25V
C085	1-101-004-00	CERAMIC	0.01MF		50V
C086	1-108-557-00	MYLAR	0.0012MF	5%	50V
C087	1-161-057-00	CERAMIC	0.033MF	10%	25V
C088	1-101-361-00	CERAMIC	150PF	5%	50V
C092	1-101-004-00	CERAMIC	0.01MF		50V
C093	1-101-006-00	CERAMIC	0.047MF		50V
C095	1-102-976-00	CERAMIC	180PF	5%	50V
C096	1-102-824-00	CERAMIC	470PF	5%	50V
C097	1-102-823-00	CERAMIC	430PF	5%	50V
C098	1-102-820-00	CERAMIC	330PF	5%	50V
C099	1-102-851-00	CERAMIC	15PF	5%	50V
C100	1-161-025-00	CERAMIC	0.1MF	10%	25V
C101	1-108-595-00	MYLAR	0.047MF	5%	50V
C102	1-161-043-00	CERAMIC	0.0022MF	10%	25V
C103	1-106-172-00	MYLAR	0.001MF	5%	50V
C104	1-102-977-00	CERAMIC	200PF	5%	50V
C105	1-102-973-00	CERAMIC	100PF	5%	50V
C106	1-123-356-00	ELECT	10MF	20%	16V
C107	1-161-025-00	CERAMIC	0.1MF	10%	25V
C108	1-101-004-00	CERAMIC	0.01MF		50V
C109	1-101-004-00	CERAMIC	0.01MF		50V
C111	1-101-882-00	CERAMIC	51PF	5%	50V
C112	1-101-004-00	CERAMIC	0.01MF		50V
C113	1-101-006-00	CERAMIC	0.047MF		50V
C114	1-101-880-00	CERAMIC	47PF	5%	50V
C116	1-101-004-00	CERAMIC	0.01MF		50V
C117	1-101-361-00	CERAMIC	150PF	5%	50V
C118	1-101-004-00	CERAMIC	0.01MF		50V
C119	1-123-306-00	ELECT	47MF	20%	10V
C120	1-101-004-00	CERAMIC	0.01MF		50V
C121	1-101-004-00	CERAMIC	0.01MF		50V
C122	1-101-004-00	CERAMIC	0.01MF		50V
C123	1-101-004-00	CERAMIC	0.01MF		50V
C124	1-102-518-00	CERAMIC	33PF	5%	50V
C125	1-123-330-00	ELECT	22MF	20%	16V
C127	1-123-318-00	ELECT	33MF	20%	16V
C128	1-123-330-00	ELECT	22MF	20%	16V
C129	1-123-330-00	ELECT	22MF	20%	16V
C130	1-123-356-00	ELECT	10MF	20%	16V
C131	1-123-380-00	ELECT	1MF	20%	50V
C132	1-123-369-00	ELECT	4.7MF	20%	25V
C133	1-102-851-00	CERAMIC	15PF	5%	50V
C134	1-102-821-00	CERAMIC	360PF	5%	50V
C135	1-102-823-00	CERAMIC	430PF	5%	50V
C136	1-102-976-00	CERAMIC	180PF	5%	50V
C137	1-102-513-00	CERAMIC	18PF	5%	50V
C138	1-102-529-00	CERAMIC	100PF	5%	50V
C139	1-102-530-00	CERAMIC	120PF	5%	50V
C140	1-102-519-00	CERAMIC	36PF	5%	50V
C141	1-102-529-00	CERAMIC	100PF	5%	50V
C142	1-123-369-00	ELECT	4.7MF	20%	25V
C144	1-102-511-00	CERAMIC	13PF	5%	50V
C145	1-102-522-00	CERAMIC	51PF	5%	50V
C146	1-102-522-00	CERAMIC	51PF	5%	50V
C147	1-102-511-00	CERAMIC	13PF	5%	50V
C148	1-101-006-00	CERAMIC	0.047MF		50V
C155	1-101-004-00	CERAMIC	0.01MF		50V
C156	1-101-004-00	CERAMIC	0.01MF		50V
C157	1-102-981-00	CERAMIC	300PF	5%	50V
C158	1-102-948-00	CERAMIC	11PF	5%	50V
C159	1-102-822-00	CERAMIC	390PF	5%	50V
C178	1-123-330-00	ELECT	22MF	20%	16V
C179	1-123-356-00	ELECT	10MF	20%	16V
C180	1-123-332-00	ELECT	47MF	20%	16V
C181	1-106-186-00	MYLAR	0.0039MF	5%	50V
C182	1-123-380-00	ELECT	1MF	20%	50V
C183	1-101-006-00	CERAMIC	0.047MF		50V
C184	1-123-332-00	ELECT	47MF	20%	16V
C185	1-123-333-00	ELECT	100MF	20%	16V
C186	1-101-004-00	CERAMIC	0.01MF		50V
C187	1-123-330-00	ELECT	22MF	20%	16V
C188	1-161-025-00	CERAMIC	0.1MF	10%	25V
C189	1-123-356-00	ELECT	10MF	20%	16V
C190	1-123-311-00	ELECT	1000MF	20%	10V
C191	1-101-004-00	CERAMIC	0.01MF		50V
C192	1-123-369-00	ELECT	4.7MF	20%	25V
C196	1-123-380-00	ELECT	1MF	20%	50V
C197	1-123-356-00	ELECT	10MF	20%	16V
C200	1-101-004-00	CERAMIC	0.01MF		50V
C201	1-123-356-00	ELECT	10MF	20%	16V
C203	1-101-004-00	CERAMIC	0.01MF		50V
C204	1-123-369-00	ELECT	4.7MF	20%	25V
C206	1-101-004-00	CERAMIC	0.01MF		50V
C207	1-161-025-00	CERAMIC	0.1MF	10%	25V
C208	1-123-356-00	ELECT	10MF	20%	16V
C211	1-123-356-00	ELECT	10MF	20%	16V
C212	1-123-333-00	ELECT	100MF	20%	16V
C217	1-161-025-00	CERAMIC	0.1MF	10%	25V
C219	1-123-356-00	ELECT	10MF	20%	16V
C220	1-161-059-00	CERAMIC	0.047MF	10%	25V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C232	1-101-004-00	CERAMIC	0.01MF		50V
C233	1-123-380-00	ELECT	1MF	20%	50V
C240	1-123-307-00	ELECT	100MF	20%	10V
C241	1-161-025-00	CERAMIC	0.1MF	10%	25V
C243	1-161-025-00	CERAMIC	0.1MF	10%	25V
C246	1-161-025-00	CERAMIC	0.1MF	10%	25V
C248	1-161-059-00	CERAMIC	0.047MF	10%	25V
C251	1-161-059-00	CERAMIC	0.047MF	10%	25V
C252	1-101-081-00	CERAMIC	130PF	5%	50V
C253	1-123-356-00	ELECT	10MF	20%	16V
C257	1-161-059-00	CERAMIC	0.047MF	10%	25V
C258	1-161-059-00	CERAMIC	0.047MF	10%	25V
C401	1-123-381-00	ELECT	2.2MF	20%	50V
C402	1-101-001-00	CERAMIC	0.001MF		50V
C403	1-101-001-00	CERAMIC	0.001MF		50V
C404	1-101-004-00	CERAMIC	0.01MF		50V
C405	1-123-330-00	ELECT	22MF	20%	16V
C406	1-123-330-00	ELECT	22MF	20%	16V
C407	1-102-962-00	CERAMIC	30PF	5%	50V
C408	1-101-888-00	CERAMIC	68PF	5%	50V
C409	1-123-381-00	ELECT	2.2MF	20%	50V
C410	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C411	1-101-005-00	CERAMIC	0.022MF		50V
C412	1-123-318-00	ELECT	33MF	20%	16V
C414	1-123-318-00	ELECT	33MF	20%	16V
C415	1-123-356-00	ELECT	10MF	20%	16V
C416	1-102-948-00	CERAMIC	11PF	5%	50V
C417	1-102-948-00	CERAMIC	11PF	5%	50V
C418	1-102-965-00	CERAMIC	39PF	5%	50V
C419	1-123-356-00	ELECT	10MF	20%	16V
C420	1-123-369-00	ELECT	4.7MF	20%	25V
C421	1-101-006-00	CERAMIC	0.047MF		50V
C502	1-101-004-00	CERAMIC	0.01MF		50V
C503	1-101-004-00	CERAMIC	0.01MF		50V
C504	1-101-005-00	CERAMIC	0.022MF		50V
C505	1-102-822-00	CERAMIC	390PF	5%	50V
C506	1-101-006-00	CERAMIC	0.047MF		50V
C507	1-123-318-00	ELECT	33MF	20%	16V
C607	1-101-004-00	CERAMIC	0.01MF		50V
C608	1-161-059-00	CERAMIC	0.047MF	10%	25V
C609	1-101-006-00	CERAMIC	0.047MF		50V
C611	1-101-006-00	CERAMIC	0.047MF		50V
C616	1-102-518-00	CERAMIC	33PF	5%	50V
C617	1-161-025-00	CERAMIC	0.1MF	10%	25V
C618	1-161-025-00	CERAMIC	0.1MF	10%	25V
C619	1-161-025-00	CERAMIC	0.1MF	10%	25V
C620	1-102-516-00	CERAMIC	27PF	5%	50V

FILTER

CF002	1-527-875-00	FILTER, CERAMIC	
CF003	1-527-849-00	FILTER, CERAMIC	

Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN001	*1-560-894-00	PIN, CONNECTOR 6P	
CN002	*1-560-896-00	PIN, CONNECTOR 8P	
CN003	*1-560-891-00	PIN, CONNECTOR 3P	
CN004	*1-560-894-00	PIN, CONNECTOR 6P	
CN005	*1-560-893-00	PIN, CONNECTOR 5P	
CN006	*1-560-893-00	PIN, CONNECTOR 5P	
CN007	*1-560-892-00	PIN, CONNECTOR 4P	
CN008	*1-560-895-00	PIN, CONNECTOR 7P	
		TRIMMER	
CV001	1-141-275-00	CAP, TRIMMER	
		DIODE	
D014	8-719-911-19	DIODE 1SS119	
D015	8-719-911-19	DIODE 1SS119	
D016	8-719-000-12	DIODE MC931	
D017	8-719-911-19	DIODE 1SS119	
D018	8-719-911-19	DIODE 1SS119	
D019	8-719-911-19	DIODE 1SS119	
D020	8-719-911-19	DIODE 1SS119	
D021	8-719-911-19	DIODE 1SS119	
D022	8-719-911-19	DIODE 1SS119	
D023	8-719-911-19	DIODE 1SS119	
D027	8-719-000-06	DIODE MC921	
D029	8-719-100-57	DIODE RD10E-B2	
D030	8-719-911-19	DIODE 1SS119	
D031	8-719-911-19	DIODE 1SS119	
D036	8-719-911-19	DIODE 1SS119	
		DELAY LINE	
DL001	1-415-313-00	DELAY LINE (1H)	
DL401	1-415-352-11	DELAY LINE, 1H	
DL501	1-415-282-00	DELAY LINE	
		IC	
IC003	8-759-201-68	IC CX10023	
IC006	8-759-203-99	IC CX10021B-NP	
IC009	8-759-101-62	IC CX20043	
IC011	8-752-006-10	IC CX20061	
IC012	8-759-979-26	IC CX7926	
IC401	8-758-662-00	IC CX866B	
		COIL	
L001	1-407-499-00	MICRO INDUCTOR 3.9MMH	
L002	1-407-496-00	MICRO INDUCTOR 2.2MMH	
L003	1-408-408-00	MICRO INDUCTOR 8.2UH	
L004	1-408-406-00	MICRO INDUCTOR 5.6UH	
L005	1-408-415-00	MICRO INDUCTOR 33UH	
L006	1-408-428-00	MICRO INDUCTOR 390UH	
L007	1-408-427-00	MICRO INDUCTOR 330UH	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
L008	1-408-421-00	MICRO INDUCTOR 100UH	
L010	1-408-427-00	MICRO INDUCTOR 330UH	
L011	1-408-423-00	MICRO INDUCTOR 150UH	
L012	1-408-409-00	MICRO INDUCTOR 10UH	
L014	1-408-416-00	MICRO INDUCTOR 39UH	
L015	1-408-419-00	MICRO INDUCTOR 68UH	
L016	1-408-413-00	MICRO INDUCTOR 22UH	
L017	1-408-423-00	MICRO INDUCTOR 150UH	
L018	1-408-419-00	MICRO INDUCTOR 68UH	
L019	1-408-416-00	MICRO INDUCTOR 39UH	
L020	1-408-416-00	MICRO INDUCTOR 39UH	
L021	1-408-422-00	MICRO INDUCTOR 120UH	
L022	1-408-424-00	MICRO INDUCTOR 180UH	
L023	1-408-422-00	MICRO INDUCTOR 120UH	
L026	1-408-416-00	MICRO INDUCTOR 39UH	
L036	1-408-429-00	MICRO INDUCTOR 470UH	
L041	1-408-424-00	MICRO INDUCTOR 180UH	
L401	1-408-397-00	MICRO INDUCTOR 1UH	
L402	1-408-397-00	MICRO INDUCTOR 1UH	
L501	1-408-408-00	MICRO INDUCTOR 8.2UH	
L502	1-408-423-00	MICRO INDUCTOR 150UH	
L601	1-408-416-00	MICRO INDUCTOR 39UH	
L602	1-408-416-00	MICRO INDUCTOR 39UH	

LOW PASS FILTER

LPF001	1-235-097-00	FILTER, LOW PASS	

VARIABLE COIL

LV501	1-407-569-00	COIL, VARIABLE 10UH	

IC LINK

PS001⚠	1-532-685-00	LINK, IC 0.8A	

TRANSISTOR

Q010	8-729-177-43	TRANSISTOR 2SD774	
Q011	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q015	8-729-245-83	TRANSISTOR 2SC2458	
Q016	8-729-245-83	TRANSISTOR 2SC2458	
Q020	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q022	8-729-245-83	TRANSISTOR 2SC2458	
Q023	8-729-245-83	TRANSISTOR 2SC2458	
Q024	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q026	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q030	8-729-245-83	TRANSISTOR 2SC2458	
Q031	8-729-900-36	TRANSISTOR DTC124ES	
Q032	8-729-245-83	TRANSISTOR 2SC2458	
Q033	8-729-245-83	TRANSISTOR 2SC2458	
Q034	8-729-245-83	TRANSISTOR 2SC2458	
Q035	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q036	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q037	8-729-384-46	TRANSISTOR 2SA844-C	

Ref.No	Part No.	Description	Remark
Q038	8-729-384-46	TRANSISTOR 2SA844-C	
Q039	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q040	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q041	8-729-384-46	TRANSISTOR 2SA844-C	
Q042	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q043	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q044	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q045	8-729-384-46	TRANSISTOR 2SA844-C	
Q047	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q048	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q049	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q050	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q051	8-729-384-46	TRANSISTOR 2SA844-C	
Q052	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q053	8-729-384-46	TRANSISTOR 2SA844-C	
Q054	8-729-384-46	TRANSISTOR 2SA844-C	
Q055	8-729-384-46	TRANSISTOR 2SA844-C	
Q056	8-729-603-30	TRANSISTOR 2SC403SP-3	
Q060	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q061	8-729-245-83	TRANSISTOR 2SC2458	
Q062	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q063	8-729-245-83	TRANSISTOR 2SC2458	
Q064	8-729-245-83	TRANSISTOR 2SC2458	
Q065	8-729-245-83	TRANSISTOR 2SC2458	
Q067	8-729-245-83	TRANSISTOR 2SC2458	
Q068	8-729-245-83	TRANSISTOR 2SC2458	
Q069	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q071	8-729-245-83	TRANSISTOR 2SC2458	
Q075	8-729-900-85	TRANSISTOR DTC144WS	
Q076	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q077	8-729-245-83	TRANSISTOR 2SC2458	
Q100	8-729-900-85	TRANSISTOR DTC144WS	
Q101	8-729-900-89	TRANSISTOR DTC144ES	
Q102	8-729-900-65	TRANSISTOR DTA144ES	
Q103	8-729-245-83	TRANSISTOR 2SC2458	
Q401	8-729-245-83	TRANSISTOR 2SC2458	
Q502	8-729-245-83	TRANSISTOR 2SC2458	
Q503	8-729-245-83	TRANSISTOR 2SC2458	
Q504	8-729-245-83	TRANSISTOR 2SC2458	
Q617	8-729-205-02	TRANSISTOR 2SA1150	

RESISTOR

R026	1-247-871-00	CARBON	47K	5%	1/6W	
R028	1-247-855-00	CARBON	10K	5%	1/6W	
R029	1-247-855-00	CARBON	10K	5%	1/6W	
R030	1-247-867-00	CARBON	33K	5%	1/6W	
R032	1-247-815-00	CARBON	220	5%	1/6W	
R035	1-247-859-00	CARBON	15K	5%	1/6W	
R037	1-247-869-00	CARBON	39K	5%	1/6W	
R038	1-247-837-00	CARBON	1.8K	5%	1/6W	
R041	1-247-838-00	CARBON	2K	5%	1/6W	
R050	1-247-853-00	CARBON	8.2K	5%	1/6W	
R051	1-247-821-00	CARBON	390	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

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Ref.No	Part No.	Description				Remark
R052	1-247-819-00	CARBON	330	5%	1/6W	
R053	1-247-843-00	CARBON	3.3K	5%	1/6W	
R054	1-247-847-00	CARBON	4.7K	5%	1/6W	
R056	1-247-867-00	CARBON	33K	5%	1/6W	
R058	1-247-855-00	CARBON	10K	5%	1/6W	
R059	1-247-859-00	CARBON	15K	5%	1/6W	
R062	1-247-855-00	CARBON	10K	5%	1/6W	
R063	1-247-841-00	CARBON	2.7K	5%	1/6W	
R064	1-247-848-00	CARBON	5.1K	5%	1/6W	
R065	1-247-889-00	CARBON	270K	5%	1/6W	
R066	1-247-870-00	CARBON	43K	5%	1/6W	
R067	1-247-862-00	CARBON	20K	5%	1/6W	
R068	1-247-838-00	CARBON	2K	5%	1/6W	
R069	1-247-831-00	CARBON	1K	5%	1/6W	
R070	1-247-831-00	CARBON	1K	5%	1/6W	
R071	1-247-855-00	CARBON	10K	5%	1/6W	
R072	1-247-841-00	CARBON	2.7K	5%	1/6W	
R073	1-247-831-00	CARBON	1K	5%	1/6W	
R074	1-247-831-00	CARBON	1K	5%	1/6W	
R075	1-247-815-00	CARBON	220	5%	1/6W	
R076	1-247-855-00	CARBON	10K	5%	1/6W	
R081	1-247-843-00	CARBON	3.3K	5%	1/6W	
R082	1-247-871-00	CARBON	47K	5%	1/6W	
R094	1-247-869-00	CARBON	39K	5%	1/6W	
R095	1-247-872-00	CARBON	51K	5%	1/6W	
R098	1-247-890-00	CARBON	300K	5%	1/6W	
R103	1-247-831-00	CARBON	1K	5%	1/6W	
R104	1-247-839-00	CARBON	2.2K	5%	1/6W	
R105	1-247-829-00	CARBON	820	5%	1/6W	
R106	1-247-831-00	CARBON	1K	5%	1/6W	
R107	1-247-824-00	CARBON	510	5%	1/6W	
R108	1-247-839-00	CARBON	2.2K	5%	1/6W	
R109	1-247-867-00	CARBON	33K	5%	1/6W	
R111	1-247-846-00	CARBON	4.3K	5%	1/6W	
R112	1-247-854-00	CARBON	9.1K	5%	1/6W	
R113	1-247-843-00	CARBON	3.3K	5%	1/6W	
R114	1-247-828-00	CARBON	750	5%	1/6W	
R115	1-247-879-00	CARBON	100K	5%	1/6W	
R116	1-247-853-00	CARBON	8.2K	5%	1/6W	
R117	1-247-846-00	CARBON	4.3K	5%	1/6W	
R120	1-247-831-00	CARBON	1K	5%	1/6W	
R121	1-247-831-00	CARBON	1K	5%	1/6W	
R122	1-247-839-00	CARBON	2.2K	5%	1/6W	
R123	1-247-841-00	CARBON	2.7K	5%	1/6W	
R124	1-247-819-00	CARBON	330	5%	1/6W	
R125	1-247-831-00	CARBON	1K	5%	1/6W	
R126	1-247-831-00	CARBON	1K	5%	1/6W	
R127	1-247-835-00	CARBON	1.5K	5%	1/6W	
R128	1-247-831-00	CARBON	1K	5%	1/6W	
R129	1-247-867-00	CARBON	33K	5%	1/6W	
R130	1-247-842-00	CARBON	3K	5%	1/6W	
R131	1-247-841-00	CARBON	2.7K	5%	1/6W	
R132	1-247-887-00	CARBON	220K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R134	1-247-847-00	CARBON	4.7K	5%	1/6W	
R135	1-247-883-00	CARBON	150K	5%	1/6W	
R136	1-247-879-00	CARBON	100K	5%	1/6W	
R137	1-247-857-00	CARBON	12K	5%	1/6W	
R138	1-247-861-00	CARBON	18K	5%	1/6W	
R139	1-247-841-00	CARBON	2.7K	5%	1/6W	
R140	1-247-867-00	CARBON	33K	5%	1/6W	
R141	1-247-831-00	CARBON	1K	5%	1/6W	
R142	1-247-842-00	CARBON	3K	5%	1/6W	
R143	1-247-847-00	CARBON	4.7K	5%	1/6W	
R144	1-247-824-00	CARBON	510	5%	1/6W	
R145	1-247-838-00	CARBON	2K	5%	1/6W	
R146	1-247-829-00	CARBON	820	5%	1/6W	
R147	1-247-855-00	CARBON	10K	5%	1/6W	
R148	1-247-831-00	CARBON	1K	5%	1/6W	
R149	1-247-819-00	CARBON	330	5%	1/6W	
R150	1-247-863-00	CARBON	22K	5%	1/6W	
R151	1-247-812-00	CARBON	160	5%	1/6W	
R152	1-247-829-00	CARBON	820	5%	1/6W	
R153	1-247-863-00	CARBON	22K	5%	1/6W	
R154	1-247-821-00	CARBON	390	5%	1/6W	
R155	1-247-839-00	CARBON	2.2K	5%	1/6W	
R156	1-247-839-00	CARBON	2.2K	5%	1/6W	
R157	1-247-837-00	CARBON	1.8K	5%	1/6W	
R158	1-247-817-00	CARBON	270	5%	1/6W	
R159	1-247-810-00	CARBON	130	5%	1/6W	
R160	1-247-832-00	CARBON	1.1K	5%	1/6W	
R161	1-247-855-00	CARBON	10K	5%	1/6W	
R162	1-247-835-00	CARBON	1.5K	5%	1/6W	
R163	1-247-842-00	CARBON	3K	5%	1/6W	
R164	1-247-830-00	CARBON	910	5%	1/6W	
R165	1-247-834-00	CARBON	1.3K	5%	1/6W	
R166	1-247-818-00	CARBON	300	5%	1/6W	
R167	1-247-849-00	CARBON	5.6K	5%	1/6W	
R168	1-247-836-00	CARBON	1.6K	5%	1/6W	
R169	1-247-840-00	CARBON	2.4K	5%	1/6W	
R170	1-247-804-00	CARBON	75	5%	1/6W	
R171	1-247-901-00	CARBON	820K	5%	1/6W	
R172	1-247-857-00	CARBON	12K	5%	1/6W	
R173	1-247-861-00	CARBON	18K	5%	1/6W	
R174	1-247-839-00	CARBON	2.2K	5%	1/6W	
R175	1-247-831-00	CARBON	1K	5%	1/6W	
R176	1-247-839-00	CARBON	2.2K	5%	1/6W	
R178	1-247-839-00	CARBON	2.2K	5%	1/6W	
R179	1-247-843-00	CARBON	3.3K	5%	1/6W	
R180	1-247-835-00	CARBON	1.5K	5%	1/6W	
R181	1-247-835-00	CARBON	1.5K	5%	1/6W	
R185	1-247-843-00	CARBON	3.3K	5%	1/6W	
R186	1-247-830-00	CARBON	910	5%	1/6W	
R187	1-247-831-00	CARBON	1K	5%	1/6W	
R188	1-247-839-00	CARBON	2.2K	5%	1/6W	
R189	1-247-834-00	CARBON	1.3K	5%	1/6W	
R190	1-247-834-00	CARBON	1.3K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R191	1-247-831-00	CARBON	1K	5%	1/6W	
R192	1-247-831-00	CARBON	1K	5%	1/6W	
R193	1-247-855-00	CARBON	10K	5%	1/6W	
R194	1-247-819-00	CARBON	330	5%	1/6W	
R195	1-247-812-00	CARBON	160	5%	1/6W	
R196	1-247-863-00	CARBON	22K	5%	1/6W	
R197	1-247-863-00	CARBON	22K	5%	1/6W	
R198	1-247-829-00	CARBON	820	5%	1/6W	
R199	1-247-821-00	CARBON	390	5%	1/6W	
R200	1-247-839-00	CARBON	2.2K	5%	1/6W	
R201	1-247-837-00	CARBON	1.8K	5%	1/6W	
R202	1-247-831-00	CARBON	1K	5%	1/6W	
R203	1-247-815-00	CARBON	220	5%	1/6W	
R204	1-247-811-00	CARBON	150	5%	1/6W	
R205	1-247-811-00	CARBON	150	5%	1/6W	
R206	1-247-834-00	CARBON	1.3K	5%	1/6W	
R207	1-247-874-00	CARBON	62K	5%	1/6W	
R208	1-247-874-00	CARBON	62K	5%	1/6W	
R209	1-247-833-00	CARBON	1.2K	5%	1/6W	
R210	1-247-824-00	CARBON	510	5%	1/6W	
R211	1-247-831-00	CARBON	1K	5%	1/6W	
R212	1-247-824-00	CARBON	510	5%	1/6W	
R213	1-247-829-00	CARBON	820	5%	1/6W	
R214	1-247-831-00	CARBON	1K	5%	1/6W	
R215	1-247-831-00	CARBON	1K	5%	1/6W	
R216	1-247-832-00	CARBON	1.1K	5%	1/6W	
R217	1-247-831-00	CARBON	1K	5%	1/6W	
R218	1-247-831-00	CARBON	1K	5%	1/6W	
R219	1-247-866-00	CARBON	30K	5%	1/6W	
R220	1-247-874-00	CARBON	62K	5%	1/6W	
R221	1-247-849-00	CARBON	5.6K	5%	1/6W	
R222	1-247-837-00	CARBON	1.8K	5%	1/6W	
R223	1-247-837-00	CARBON	1.8K	5%	1/6W	
R231	1-247-867-00	CARBON	33K	5%	1/6W	
R235	1-247-831-00	CARBON	1K	5%	1/6W	
R236	1-247-853-00	CARBON	8.2K	5%	1/6W	
R239	1-247-855-00	CARBON	10K	5%	1/6W	
R241	1-247-804-00	CARBON	75	5%	1/6W	
R242	1-247-879-00	CARBON	100K	5%	1/6W	
R243	1-247-855-00	CARBON	10K	5%	1/6W	
R244	1-247-851-00	CARBON	6.8K	5%	1/6W	
R245	1-247-879-00	CARBON	100K	5%	1/6W	
R246	1-247-871-00	CARBON	47K	5%	1/6W	
R247	1-247-871-00	CARBON	47K	5%	1/6W	
R248	1-247-818-00	CARBON	300	5%	1/6W	
R249	1-247-813-00	CARBON	180	5%	1/6W	
R250	1-247-811-00	CARBON	150	5%	1/6W	
R251	1-247-838-00	CARBON	2K	5%	1/6W	
R252	1-247-803-00	CARBON	68	5%	1/6W	
R254	1-247-855-00	CARBON	10K	5%	1/6W	
R255	1-247-858-00	CARBON	13K	5%	1/6W	
R256	1-247-843-00	CARBON	3.3K	5%	1/6W	
R257	1-247-835-00	CARBON	1.5K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R258	1-247-852-00	CARBON	7.5K	5%	1/6W	
R259	1-247-831-00	CARBON	1K	5%	1/6W	
R260	1-247-841-00	CARBON	2.7K	5%	1/6W	
R261	1-247-863-00	CARBON	22K	5%	1/6W	
R262	1-247-849-00	CARBON	5.6K	5%	1/6W	
R274	1-247-883-00	CARBON	150K	5%	1/6W	
R275	1-247-871-00	CARBON	47K	5%	1/6W	
R276	1-247-849-00	CARBON	5.6K	5%	1/6W	
R277	1-247-855-00	CARBON	10K	5%	1/6W	
R280	1-247-821-00	CARBON	390	5%	1/6W	
R281	1-247-883-00	CARBON	150K	5%	1/6W	
R282	1-247-819-00	CARBON	330	5%	1/6W	
R283	1-247-831-00	CARBON	1K	5%	1/6W	
R284	1-247-877-00	CARBON	82K	5%	1/6W	
R286	1-247-848-00	CARBON	5.1K	5%	1/6W	
R287	1-247-831-00	CARBON	1K	5%	1/6W	
R291	1-247-863-00	CARBON	22K	5%	1/6W	
R292	1-247-875-00	CARBON	68K	5%	1/6W	
R293	1-247-819-00	CARBON	330	5%	1/6W	
R295	1-247-839-00	CARBON	2.2K	5%	1/6W	
R296	1-247-811-00	CARBON	150	5%	1/6W	
R298	1-247-894-00	CARBON	430K	5%	1/6W	
R299	1-247-892-00	CARBON	360K	5%	1/6W	
R301	1-247-855-00	CARBON	10K	5%	1/6W	
R302	1-247-819-00	CARBON	330	5%	1/6W	
R303	1-247-819-00	CARBON	330	5%	1/6W	
R304	1-247-847-00	CARBON	4.7K	5%	1/6W	
R305	1-247-835-00	CARBON	1.5K	5%	1/6W	
R312	1-247-847-00	CARBON	4.7K	5%	1/6W	
R313	1-247-823-00	CARBON	470	5%	1/6W	
R317	1-247-855-00	CARBON	10K	5%	1/6W	
R318	1-247-865-00	CARBON	27K	5%	1/6W	
R320	1-247-878-00	CARBON	91K	5%	1/6W	
R321	1-247-887-00	CARBON	220K	5%	1/6W	
R325	1-247-807-00	CARBON	100	5%	1/6W	
R331	1-247-852-00	CARBON	7.5K	5%	1/6W	
R340	1-247-887-00	CARBON	220K	5%	1/6W	
R341	1-247-815-00	CARBON	220	5%	1/6W	
R342	1-247-807-00	CARBON	100	5%	1/6W	
R346	1-247-847-00	CARBON	4.7K	5%	1/6W	
R347	1-247-879-00	CARBON	100K	5%	1/6W	
R348	1-247-855-00	CARBON	10K	5%	1/6W	
R349	1-247-831-00	CARBON	1K	5%	1/6W	
R350	1-247-890-00	CARBON	300K	5%	1/6W	
R351	1-247-815-00	CARBON	220	5%	1/6W	
R352	1-247-855-00	CARBON	10K	5%	1/6W	
R353	1-247-831-00	CARBON	1K	5%	1/6W	
R357	1-247-829-00	CARBON	820	5%	1/6W	
R358	1-247-855-00	CARBON	10K	5%	1/6W	
R359	1-247-839-00	CARBON	2.2K	5%	1/6W	
R370	1-247-790-00	CARBON	20	5%	1/6W	
R401	1-247-810-00	CARBON	130	5%	1/6W	
R402	1-247-808-00	CARBON	110	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R403	1-247-867-00	CARBON	33K	5%	1/6W	
R404	1-247-871-00	CARBON	47K	5%	1/6W	
R405	1-247-831-00	CARBON	1K	5%	1/6W	
R406	1-247-832-00	CARBON	1.1K	5%	1/6W	
R407	1-247-832-00	CARBON	1.1K	5%	1/6W	
R408	1-247-849-00	CARBON	5.6K	5%	1/6W	
R409	1-247-831-00	CARBON	1K	5%	1/6W	
R410	1-247-831-00	CARBON	1K	5%	1/6W	
R411	1-247-847-00	CARBON	4.7K	5%	1/6W	
R412	1-247-828-00	CARBON	750	5%	1/6W	
R413	1-247-812-00	CARBON	160	5%	1/6W	
R414	1-247-847-00	CARBON	4.7K	5%	1/6W	
R415	1-247-831-00	CARBON	1K	5%	1/6W	
R416	1-247-846-00	CARBON	4.3K	5%	1/6W	
R510	1-247-824-00	CARBON	510	5%	1/6W	
R512	1-247-847-00	CARBON	4.7K	5%	1/6W	
R513	1-247-863-00	CARBON	22K	5%	1/6W	
R514	1-247-821-00	CARBON	390	5%	1/6W	
R515	1-247-839-00	CARBON	2.2K	5%	1/6W	
R516	1-247-821-00	CARBON	390	5%	1/6W	
R517	1-247-821-00	CARBON	390	5%	1/6W	
R518	1-247-821-00	CARBON	390	5%	1/6W	
R519	1-247-821-00	CARBON	390	5%	1/6W	
R520	1-247-839-00	CARBON	2.2K	5%	1/6W	
R521	1-247-821-00	CARBON	390	5%	1/6W	
R522	1-247-839-00	CARBON	2.2K	5%	1/6W	
R525	1-247-843-00	CARBON	3.3K	5%	1/6W	
R601	1-247-847-00	CARBON	4.7K	5%	1/6W	
R603	1-247-843-00	CARBON	3.3K	5%	1/6W	
R632	1-247-855-00	CARBON	10K	5%	1/6W	
R633	1-247-831-00	CARBON	1K	5%	1/6W	
R635	1-247-883-00	CARBON	150K	5%	1/6W	
R643	1-247-883-00	CARBON	150K	5%	1/6W	
R644	1-247-818-00	CARBON	300	5%	1/6W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV002	1-228-748-00	RES, ADJ, CARBON 10K	
RV003	1-228-750-00	RES, ADJ, CARBON 47K	
RV005	1-228-750-00	RES, ADJ, CARBON 47K	
RV006	1-228-749-00	RES, ADJ, CARBON 22K	
RV007	1-228-748-00	RES, ADJ, CARBON 10K	
RV008	1-228-745-00	RES, ADJ, CARBON 1K	
RV009	1-228-996-00	RES, ADJ, METAL GLAZE 47K	
RV010	1-228-749-00	RES, ADJ, CARBON 22K	
RV012	1-228-750-00	RES, ADJ, CARBON 47K	
RV013	1-228-750-00	RES, ADJ, CARBON 47K	
RV014	1-228-748-00	RES, ADJ, CARBON 10K	
RV015	1-228-989-00	RES, ADJ, METAL GLAZE 470	
RV016	1-228-745-00	RES, ADJ, CARBON 1K	
RV019	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K	
RV020	1-228-745-00	RES, ADJ, CARBON 1K	
RV021	1-228-750-00	RES, ADJ, CARBON 47K	
RV401	1-228-994-00	RES, ADJ, METAL GLAZE 10K	
RV501	1-228-989-00	RES, ADJ, METAL GLAZE 470	
RV602	1-228-990-00	RES, ADJ, METAL GLAZE 1K	

SWITCH

Ref.No	Part No.	Description	Remark
S601	1-553-725-21	SWITCH, SLIDE	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T001	1-426-093-00	COIL, REC C BPT	

CRYSTAL

Ref.No	Part No.	Description	Remark
X001	1-527-345-00	CRYSTAL, OSC	

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*A-6715-239-A SS-34 BOARD, COMPLETE
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Ref.No	Part No.	Description	Remark
	*3-681-170-00	HEAT SINK, S	
	*3-846-049-11	PIN, LEAD	
	7-621-770-87	SCREW +B 2.6X5	

CAPACITOR

Ref.No	Part No.	Description				Remark
C304	1-123-332-00	ELECT	47MF	20%	16V	
C305	1-123-333-00	ELECT	100MF	20%	16V	
C306	1-123-332-00	ELECT	47MF	20%	16V	
C307	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C308	1-123-332-00	ELECT	47MF	20%	16V	
C309	1-123-381-00	ELECT	2.2MF	20%	50V	
C310	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C311	1-127-477-00	ELECT(SOLID)	0.47MF	5%	25V	
C312	1-123-332-00	ELECT	47MF	20%	16V	
C313	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C314	1-131-357-00	TANTALUM	4.7MF	20%	25V	
C315	1-123-381-00	ELECT	2.2MF	20%	50V	
C316	1-131-357-00	TANTALUM	4.7MF	20%	25V	
C317	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C318	1-123-381-00	ELECT	2.2MF	20%	50V	
C319	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C320	1-161-054-00	CERAMIC	0.018MF	10%	25V	
C321	1-123-356-00	ELECT	10MF	20%	16V	
C322	1-123-330-00	ELECT	22MF	20%	16V	
C323	1-124-429-00	ELECT	0.68MF	20%	50V	
C324	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C325	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C326	1-123-330-00	ELECT	22MF	20%	16V	
C327	1-130-483-00	MYLAR	0.01MF	5%	50V	
C328	1-130-483-00	MYLAR	0.01MF	5%	50V	
C329	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C330	1-123-382-00	ELECT	3.3MF	20%	50V	
C331	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C332	1-123-310-00	ELECT	470MF	20%	10V	
C333	1-123-310-00	ELECT	470MF	20%	10V	
C334	1-123-382-00	ELECT	3.3MF	20%	50V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C335	1-123-382-00	ELECT	3.3MF	20%	50V
C336	1-161-059-00	CERAMIC	0.047MF	10%	25V
C337	1-130-482-00	MYLAR	0.0082MF	5%	50V
C338	1-123-382-00	ELECT	3.3MF	20%	50V
C339	1-161-054-00	CERAMIC	0.018MF	10%	25V
C340	1-161-013-00	CERAMIC	0.01MF	10%	25V
C341	1-161-013-00	CERAMIC	0.01MF	10%	25V
C342	1-161-054-00	CERAMIC	0.018MF	10%	25V
C343	1-127-479-51	ELECT(SOLID)	1MF	5%	25V
C344	1-161-055-00	CERAMIC	0.022MF	10%	25V
C345	1-161-104-00	CERAMIC	0.0012MF	10%	25V
C346	1-161-054-00	CERAMIC	0.018MF	10%	25V
C347	1-161-054-00	CERAMIC	0.018MF	10%	25V
C351	1-161-057-00	CERAMIC	0.033MF	10%	25V
C352	1-123-381-00	ELECT	2.2MF	20%	50V
C353	1-161-057-00	CERAMIC	0.033MF	10%	25V
C354	1-123-343-00	ELECT	33MF	20%	25V
C355	1-123-343-00	ELECT	33MF	20%	25V
C356	1-123-308-00	ELECT	220MF	20%	6.3V
C357	1-161-059-00	CERAMIC	0.047MF	10%	25V
C358	1-123-333-00	ELECT	100MF	20%	16V
C359	1-123-617-00	ELECT	10MF	20%	16V
C361	1-123-821-00	ELECT	47MF	20%	16V
C362	1-123-333-00	ELECT	100MF	20%	16V
C364	1-161-059-00	CERAMIC	0.047MF	10%	25V
C365	1-123-380-00	ELECT	1MF	20%	50V
C366	1-161-013-00	CERAMIC	0.01MF	10%	25V
C367	1-161-059-00	CERAMIC	0.047MF	10%	25V
C368	1-161-043-00	CERAMIC	0.0022MF	10%	50V
C370	1-161-063-00	CERAMIC	0.1MF	20%	25V
C601	1-123-318-00	ELECT	33MF	20%	16V
C603	1-123-330-00	ELECT	22MF	20%	16V
C604	1-161-055-00	CERAMIC	0.022MF	10%	25V
C605	1-161-059-00	CERAMIC	0.047MF	10%	25V
C606	1-161-059-00	CERAMIC	0.047MF	10%	25V
C607	1-129-794-00	FILM	0.0033MF	5%	100V
C608	1-129-794-00	FILM	0.0033MF	5%	100V
C611	1-102-518-00	CERAMIC	33PF	5%	50V
C612	1-102-518-00	CERAMIC	33PF	5%	50V
C613	1-123-318-00	ELECT	33MF	20%	10V
C616	1-123-382-00	ELECT	3.3MF	20%	50V
C650	1-161-773-00	CERAMIC	0.1MF	20%	25V
C651	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C652	1-123-381-00	ELECT	2.2MF	20%	50V
C653	1-102-973-00	CERAMIC	100PF	5%	50V
C654	1-102-973-00	CERAMIC	100PF	5%	50V
C655	1-102-973-00	CERAMIC	100PF	5%	50V
C656	1-102-973-00	CERAMIC	100PF	5%	50V
C657	1-102-973-00	CERAMIC	100PF	5%	50V
		FILTER			
CF601	1-527-992-11	OSCILLATOR, CERAMIC			

Ref.No	Part No.	Description	Remark
		CONNECTOR	
CN301	*1-560-892-00	PIN, CONNECTOR 4P	
CN302	*1-560-466-00	PIN, CONNECTOR 3P	
CN303	*1-560-892-00	PIN, CONNECTOR 4P	
CN304	*1-560-892-00	PIN, CONNECTOR 4P	
CN305	*1-560-890-00	PIN, CONNECTOR 2P	
CN306	*1-560-894-00	PIN, CONNECTOR 6P	
CN307	*1-560-890-00	PIN, CONNECTOR 2P	
CN308	*1-560-892-00	PIN, CONNECTOR 4P	
CN309	*1-560-895-00	PIN, CONNECTOR 7P	
CN310	*1-560-891-00	PIN, CONNECTOR 3P	
CN311	*1-560-891-00	PIN, CONNECTOR 3P	
CN601	*1-560-891-00	PIN, CONNECTOR 3P	
CN602	*1-560-896-00	PIN, CONNECTOR 8P	
CN603	*1-560-890-00	PIN, CONNECTOR 2P	
CN604	*1-560-890-00	PIN, CONNECTOR 2P	
CN605	*1-560-893-00	PIN, CONNECTOR 5P	
CN606	*1-560-890-00	PIN, CONNECTOR 2P	
CN607	*1-560-891-00	PIN, CONNECTOR 3P	
CN608	*1-560-890-00	PIN, CONNECTOR 2P	
CN609	*1-560-894-00	PIN, CONNECTOR 6P	
CN610	*1-560-896-00	PIN, CONNECTOR 8P	
CN611	*1-560-891-00	PIN, CONNECTOR 3P	
CN612	*1-560-891-00	PIN, CONNECTOR 3P	
CN613	*1-560-466-00	PIN, CONNECTOR 3P	
		DIODE	
D301	8-719-000-06	DIODE MC921	
D302	8-719-000-04	DIODE MC911	
D303	8-719-911-19	DIODE 1SS119	
D304	8-719-101-50	DIODE RD5.1E-L2	
D305	8-719-911-19	DIODE 1SS119	
D308	8-719-000-12	DIODE MC931	
D316	8-719-911-19	DIODE 1SS119	
D319	8-719-100-29	DIODE RD5.1E-B1	
D321	8-719-911-19	DIODE 1SS119	
D601	8-719-000-06	DIODE MC921	
D602	8-719-000-06	DIODE MC921	
D603	8-719-000-04	DIODE MC911	
D608	8-719-911-19	DIODE 1SS119	
		IC	
IC301	8-751-941-05	IC CX194B-5	
IC302	8-759-135-80	IC UPC358C	
IC303	8-759-145-58	IC UPC4558C	
IC304	8-759-132-40	IC UPC324C	
IC305	8-759-240-53	IC TC4053BP	
IC306	8-759-132-40	IC UPC324C	
IC601	8-759-911-08	IC MB88551-133M	
IC602	8-759-800-72	IC LA7205	
IC603	8-759-600-24	IC M54543L	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		COIL	
L601	1-407-492-00	MICRO INDUCTOR 1MMH	
		IC LINK	
PS301⚠	1-532-637-00	LINK, IC 1A	
PS302⚠	1-532-679-00	LINK, IC 0.6A	
PS303⚠	1-532-605-00	LINK, IC 0.4A	
PS304⚠	1-532-637-00	LINK, IC 1A	
		TRANSISTOR	
Q301	8-729-245-83	TRANSISTOR 2SC2458	
Q302	8-729-900-89	TRANSISTOR DTC144ES	
Q303	8-729-245-83	TRANSISTOR 2SC2458	
Q304	8-729-245-83	TRANSISTOR 2SC2458	
Q305	8-729-245-83	TRANSISTOR 2SC2458	
Q306	8-729-900-89	TRANSISTOR DTC144ES	
Q307	8-729-200-20	TRANSISTOR 2SK107-2	
Q308	8-729-245-83	TRANSISTOR 2SC2458	
Q312	8-729-245-83	TRANSISTOR 2SC2458	
Q313	8-729-245-83	TRANSISTOR 2SC2458	
Q314	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q315	8-729-316-16	TRANSISTOR 2SC1061	
Q316	8-729-245-83	TRANSISTOR 2SC2458	
Q317	8-729-245-83	TRANSISTOR 2SC2458	
Q318	8-729-245-83	TRANSISTOR 2SC2458	
Q321	8-729-177-43	TRANSISTOR 2SD774	
Q322	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q323	8-729-805-13	TRANSISTOR 2SC1475-13	
Q324	8-729-117-54	TRANSISTOR 2SA1175	
Q325	8-729-245-83	TRANSISTOR 2SC2458	
Q326	8-729-245-83	TRANSISTOR 2SC2458	
Q330	8-729-316-16	TRANSISTOR 2SC1061	
Q331	8-729-245-83	TRANSISTOR 2SC2458	
Q332	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q333	8-729-900-89	TRANSISTOR DTC144ES	
Q335	8-729-245-83	TRANSISTOR 2SC2458	
Q336	8-729-245-83	TRANSISTOR 2SC2458	
Q337	8-729-245-83	TRANSISTOR 2SC2458	
Q338	8-729-245-83	TRANSISTOR 2SC2458	
Q340	8-729-177-43	TRANSISTOR 2SD774	
Q341	8-729-900-89	TRANSISTOR DTC144ES	
Q342	8-729-900-89	TRANSISTOR DTC144ES	
Q343	8-729-245-83	TRANSISTOR 2SC2458	
Q344	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q345	8-729-900-65	TRANSISTOR DTA144ES	
Q346	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q347	8-729-900-89	TRANSISTOR DTC144ES	
Q349	8-729-900-89	TRANSISTOR DTC144ES	
Q601	8-729-116-42	TRANSISTOR 2SD1164	
Q602	8-729-116-42	TRANSISTOR 2SD1164	
Q603	8-729-177-43	TRANSISTOR 2SD774	
Q604	8-729-177-43	TRANSISTOR 2SD774	

Ref.No	Part No.	Description	Remark
Q615	8-729-900-69	TRANSISTOR DTA144WS	
Q617	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q618	8-729-245-83	TRANSISTOR 2SC2458	
Q619	8-729-245-83	TRANSISTOR 2SC2458	
Q620	8-729-900-89	TRANSISTOR DTC144ES	
Q621	8-729-245-83	TRANSISTOR 2SC2458	
Q623	8-729-245-83	TRANSISTOR 2SC2458	
Q624	8-729-900-61	TRANSISTOR DTA114ES	
		RESISTOR	
R301	1-247-871-00	CARBON 47K 5% 1/6W	
R302	1-247-859-00	CARBON 15K 5% 1/6W	
R303	1-247-871-00	CARBON 47K 5% 1/6W	
R304	1-247-859-00	CARBON 15K 5% 1/6W	
R305	1-247-855-00	CARBON 10K 5% 1/6W	
R307	1-247-855-00	CARBON 10K 5% 1/6W	
R308	1-247-829-00	CARBON 820 5% 1/6W	
R309	1-247-881-00	CARBON 120K 5% 1/6W	
R310	1-247-835-00	CARBON 1.5K 5% 1/6W	
R311	1-247-863-00	CARBON 22K 5% 1/6W	
R312	1-247-864-00	CARBON 24K 5% 1/6W	
R313	1-247-831-00	CARBON 1K 5% 1/6W	
R314	1-247-835-00	CARBON 1.5K 5% 1/6W	
R315	1-247-829-00	CARBON 820 5% 1/6W	
R316	1-247-879-00	CARBON 100K 5% 1/6W	
R317	1-247-903-00	CARBON 1M 5% 1/6W	
R318	1-247-885-00	CARBON 180K 5% 1/6W	
R319	1-247-844-00	CARBON 3.6K 5% 1/6W	
R320	1-247-859-00	CARBON 15K 5% 1/6W	
R321	1-247-845-00	CARBON 3.9K 5% 1/6W	
R322	1-247-903-00	CARBON 1M 5% 1/6W	
R323	1-247-855-00	CARBON 10K 5% 1/6W	
R324	1-247-831-00	CARBON 1K 5% 1/6W	
R325	1-247-903-00	CARBON 1M 5% 1/6W	
R326	1-247-831-00	CARBON 1K 5% 1/6W	
R327	1-247-855-00	CARBON 10K 5% 1/6W	
R328⚠	1-212-850-00	FUSIBLE 5.1 5% 1/4W	F
R329	1-247-857-00	CARBON 12K 5% 1/6W	
R330	1-247-859-00	CARBON 15K 5% 1/6W	
R331	1-247-847-00	CARBON 4.7K 5% 1/6W	
R332	1-247-873-00	CARBON 56K 5% 1/6W	
R333	1-247-900-00	CARBON 750K 5% 1/6W	
R334	1-247-867-00	CARBON 33K 5% 1/6W	
R335	1-247-867-00	CARBON 33K 5% 1/6W	
R336	1-247-856-00	CARBON 11K 5% 1/6W	
R337	1-247-855-00	CARBON 10K 5% 1/6W	
R338	1-247-842-00	CARBON 3K 5% 1/6W	
R339	1-247-843-00	CARBON 3.3K 5% 1/6W	
R340	1-247-825-00	CARBON 560 5% 1/6W	
R341	1-247-871-00	CARBON 47K 5% 1/6W	
R342	1-247-855-00	CARBON 10K 5% 1/6W	
R343	1-247-865-00	CARBON 27K 5% 1/6W	
R344	1-247-872-00	CARBON 51K 5% 1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R345	1-247-865-00	CARBON	27K	5%	1/6W	
R346	1-247-848-00	CARBON	5.1K	5%	1/6W	
R347	1-247-887-00	CARBON	220K	5%	1/6W	
R348	1-247-887-00	CARBON	220K	5%	1/6W	
R349	1-247-845-00	CARBON	3.9K	5%	1/6W	
R352	1-247-871-00	CARBON	47K	5%	1/6W	
R353	1-247-867-00	CARBON	33K	5%	1/6W	
R354	1-247-855-00	CARBON	10K	5%	1/6W	
R355	1-247-887-00	CARBON	220K	5%	1/6W	
R356	1-247-871-00	CARBON	47K	5%	1/6W	
R357	1-247-871-00	CARBON	47K	5%	1/6W	
R358	1-247-863-00	CARBON	22K	5%	1/6W	
R359	1-247-863-00	CARBON	22K	5%	1/6W	
R361	1-247-871-00	CARBON	47K	5%	1/6W	
R362	1-247-861-00	CARBON	18K	5%	1/6W	
R363	1-247-879-00	CARBON	100K	5%	1/6W	
R364	1-247-867-00	CARBON	33K	5%	1/6W	
R365	1-247-867-00	CARBON	33K	5%	1/6W	
R366	1-247-867-00	CARBON	33K	5%	1/6W	
R367	1-247-859-00	CARBON	15K	5%	1/6W	
R368 ⚠	1-206-482-00	METAL OXIDE	62	5%	2W	F
R370	1-247-871-00	CARBON	47K	5%	1/6W	
R371	1-247-867-00	CARBON	33K	5%	1/6W	
R372	1-247-855-00	CARBON	10K	5%	1/6W	
R373	1-247-883-00	CARBON	150K	5%	1/6W	
R374	1-247-883-00	CARBON	150K	5%	1/6W	
R375	1-247-883-00	CARBON	150K	5%	1/6W	
R376	1-247-883-00	CARBON	150K	5%	1/6W	
R377	1-247-879-00	CARBON	100K	5%	1/6W	
R378	1-247-879-00	CARBON	100K	5%	1/6W	
R379	1-247-879-00	CARBON	100K	5%	1/6W	
R380	1-247-879-00	CARBON	100K	5%	1/6W	
R381	1-247-867-00	CARBON	33K	5%	1/6W	
R382	1-247-867-00	CARBON	33K	5%	1/6W	
R383	1-247-897-00	CARBON	560K	5%	1/6W	
R384	1-247-897-00	CARBON	560K	5%	1/6W	
R386	1-247-857-00	CARBON	12K	5%	1/6W	
R387	1-246-981-00	CARBON	4.7	5%	1/8W	F
R389 ⚠	1-212-366-00	METAL OXIDE	3.3	5%	1W	F
R390	1-247-855-00	CARBON	10K	5%	1/6W	
R391	1-247-845-00	CARBON	3.9K	5%	1/6W	
R392	1-247-819-00	CARBON	330	5%	1/6W	
R394	1-247-832-00	CARBON	1.1K	5%	1/6W	
R397	1-247-831-00	CARBON	1K	5%	1/6W	
R398 ⚠	1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R399 ⚠	1-212-360-00	METAL OXIDE	1	5%	1W	F
R400	1-247-828-00	CARBON	750	5%	1/6W	
R406 ⚠	1-212-360-00	METAL OXIDE	1	5%	1W	F
R407	1-247-847-00	CARBON	4.7K	5%	1/6W	
R408	1-247-843-00	CARBON	3.3K	5%	1/6W	
R409	1-247-838-00	CARBON	2K	5%	1/6W	
R410	1-247-847-00	CARBON	4.7K	5%	1/6W	
R411	1-247-855-00	CARBON	10K	5%	1/6W	
R413	1-247-847-00	CARBON	4.7K	5%	1/6W	
R417	1-247-837-00	CARBON	1.8K	5%	1/6W	
R419	1-247-855-00	CARBON	10K	5%	1/6W	
R426	1-247-831-00	CARBON	1K	5%	1/6W	
R427	1-247-863-00	CARBON	22K	5%	1/6W	
R428	1-247-863-00	CARBON	22K	5%	1/6W	
R429	1-247-848-00	CARBON	5.1K	5%	1/6W	
R430	1-247-859-00	CARBON	15K	5%	1/6W	
R431	1-247-867-00	CARBON	33K	5%	1/6W	
R432	1-247-871-00	CARBON	47K	5%	1/6W	
R433	1-247-831-00	CARBON	1K	5%	1/6W	
R436	1-247-855-00	CARBON	10K	5%	1/6W	
R437	1-247-855-00	CARBON	10K	5%	1/6W	
R438	1-247-851-00	CARBON	6.8K	5%	1/6W	
R439	1-247-839-00	CARBON	2.2K	5%	1/6W	
R440	1-247-855-00	CARBON	10K	5%	1/6W	
R441	1-247-867-00	CARBON	33K	5%	1/6W	
R442	1-247-847-00	CARBON	4.7K	5%	1/6W	
R443	1-247-831-00	CARBON	1K	5%	1/6W	
R444	1-247-855-00	CARBON	10K	5%	1/6W	
R445	1-247-839-00	CARBON	2.2K	5%	1/6W	
R446	1-247-851-00	CARBON	6.8K	5%	1/6W	
R447	1-247-855-00	CARBON	10K	5%	1/6W	
R448	1-247-863-00	CARBON	22K	5%	1/6W	
R449	1-247-871-00	CARBON	47K	5%	1/6W	
R451	1-247-815-00	CARBON	220	5%	1/6W	
R452	1-247-847-00	CARBON	4.7K	5%	1/6W	
R453	1-247-843-00	CARBON	3.3K	5%	1/6W	
R454	1-247-843-00	CARBON	3.3K	5%	1/6W	
R455	1-247-843-00	CARBON	3.3K	5%	1/6W	
R461	1-247-843-00	CARBON	3.3K	5%	1/6W	
R462	1-247-903-00	CARBON	1M	5%	1/6W	
R463	1-247-871-00	CARBON	47K	5%	1/6W	
R464	1-247-871-00	CARBON	47K	5%	1/6W	
R465	1-247-863-00	CARBON	22K	5%	1/6W	
R467	1-247-847-00	CARBON	4.7K	5%	1/6W	
R469	1-247-863-00	CARBON	22K	5%	1/6W	
R471	1-247-825-00	CARBON	560	5%	1/6W	
R473	1-247-843-00	CARBON	3.3K	5%	1/6W	
R601	1-247-835-00	CARBON	1.5K	5%	1/6W	
R602	1-247-864-00	CARBON	24K	5%	1/6W	
R603	1-247-864-00	CARBON	24K	5%	1/6W	
R604	1-247-864-00	CARBON	24K	5%	1/6W	
R612	1-247-827-00	CARBON	680	5%	1/6W	
R614	1-247-845-00	CARBON	3.9K	5%	1/6W	
R615	1-247-855-00	CARBON	10K	5%	1/6W	
R616	1-247-845-00	CARBON	3.9K	5%	1/6W	
R617	1-247-855-00	CARBON	10K	5%	1/6W	
R618	1-215-454-00	METAL	24K	1%	1/6W	
R619	1-247-863-00	CARBON	22K	5%	1/6W	
R620	1-247-873-00	CARBON	56K	5%	1/6W	
R621	1-247-851-00	CARBON	6.8K	5%	1/6W	
R622	1-247-855-00	CARBON	10K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
R623	1-247-861-00	CARBON 18K 5% 1/6W	
R636	1-247-835-00	CARBON 1.5K 5% 1/6W	
R637	1-247-104-00	CARBON 75 5% 1/4W	
R639	1-247-855-00	CARBON 10K 5% 1/6W	
R640	1-247-875-00	CARBON 68K 5% 1/6W	
R643	1-247-839-00	CARBON 2.2K 5% 1/6W	
R644	1-247-864-00	CARBON 24K 5% 1/6W	
R645	1-247-871-00	CARBON 47K 5% 1/6W	
R646	1-247-851-00	CARBON 6.8K 5% 1/6W	
R648	1-247-107-00	CARBON 100 5% 1/4W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV301	1-228-994-00	RES, ADJ, METAL GLAZE 10K	
RV302	1-228-994-00	RES, ADJ, METAL GLAZE 10K	
RV303	1-228-996-00	RES, ADJ, METAL GLAZE 47K	
RV304	1-228-750-00	RES, ADJ, CARBON 47K	
RV305	1-228-750-00	RES, ADJ, CARBON 47K	
RV306	1-228-750-00	RES, ADJ, CARBON 47K	
RV307	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	
RV308	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	

THERMISTOR

Ref.No	Part No.	Description	Remark
TH301	1-800-200-00	THERMISTOR S-3K	
TH302	1-800-198-XX	THERMISTOR S-1K	

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*1-613-231-12 FU-25 BOARD

DIODE

Ref.No	Part No.	Description	Remark
D001	8-719-812-33	DIODE TLG123A	

RESISTOR

Ref.No	Part No.	Description	Remark
R001	1-247-123-00	CARBON 470 5% 1/4W	
R002	1-247-851-00	CARBON 6.8K 5% 1/6W	
R003	1-247-851-00	CARBON 6.8K 5% 1/6W	
R004	1-247-855-00	CARBON 10K 5% 1/6W	
R005	1-247-855-00	CARBON 10K 5% 1/6W	
R006	1-247-861-00	CARBON 18K 5% 1/6W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV001	1-230-421-11	RES, VAR, CARBON 100K	

SWITCH

Ref.No	Part No.	Description	Remark
S001	1-554-174-00	SWITCH, KEY BOARD	
S002	1-554-174-00	SWITCH, KEY BOARD	
S003	1-554-174-00	SWITCH, KEY BOARD	
S004	1-554-174-00	SWITCH, KEY BOARD	
S005	1-554-174-00	SWITCH, KEY BOARD	
S006	1-554-174-00	SWITCH, KEY BOARD	
S007	1-554-174-00	SWITCH, KEY BOARD	
S008	1-554-174-00	SWITCH, KEY BOARD	

Ref.No	Part No.	Description	Remark
	*A-6721-219-A	TA-22 BOARD, COMPLETE (EC MODEL)	
	*A-6721-220-A	TA-22 BOARD, COMPLETE (UK MODEL)	
	*A-6721-222-A	TA-22 BOARD, COMPLETE (AEP, E MODEL)	
	*1-556-934-00	CABLE, PIN (EC MODEL)	
	*3-662-227-00	HOLDER (R-3), LED (AEP, E, EC MODEL)	
	*3-662-383-00	BAND, RETAINER, TUNER	
	*3-674-390-00	HOLDER (B), LED	
	*3-687-523-01	LID, UPPER, SHIELD CASE, TU	
	*3-687-524-01	LID, BOTTOM, SHIELD CASE, TU	
	*3-687-525-01	CASE (MAIN), SHIELD, TU	
	*3-687-550-01	CASE (UPPER LID), SHIELD, AU	
	*3-687-558-01	CASE (MAIN), SHIELD, AU	
	*3-687-559-01	CASE (BOTTOM LID), SHIELD, AU	
	*4-336-029-00	PLATE, SHIELD	

CAPACITOR

Ref.No	Part No.	Description	Remark
C001	1-102-530-00	CERAMIC 120PF 5% 50V	
C002	1-102-529-00	CERAMIC 100PF 5% 50V	
C003	1-102-508-00	CERAMIC 10PF 0.5PF 50V	
C004	1-102-523-00	CERAMIC 56PF 5% 50V	
C006	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C007	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C008	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C009	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C010	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C011	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C012	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C013	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C014	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C015	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C016	1-123-369-00	ELECT 4.7MF 20% 25V	
C017	1-161-013-00	CERAMIC 0.01MF 20% 25V	(EC MODEL)
C018	1-123-356-00	ELECT 10MF 20% 16V	(AEP, E, EC MODEL)
C019	1-161-013-00	CERAMIC 0.01MF 20% 25V	(AEP, E, EC MODEL)
C020	1-123-356-00	ELECT 10MF 20% 16V	(AEP, E, EC MODEL)
C021	1-102-129-00	CERAMIC 0.01MF 10% 50V	
C022	1-102-529-00	CERAMIC 100PF 5% 50V	
C023	1-102-518-00	CERAMIC 33PF 5% 50V	
C024	1-102-504-00	CERAMIC 4PF 0.25PF 50V	
C025	1-102-504-00	CERAMIC 4PF 0.25PF 50V	
C026	1-102-518-00	CERAMIC 33PF 5% 50V	
C027	1-102-529-00	CERAMIC 100PF 5% 50V	
C028	1-102-125-00	CERAMIC 0.0047MF 10% 50V	
C029	1-123-356-00	ELECT 10MF 20% 16V	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C030	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C031	1-123-379-00	ELECT	0.47MF	20%	50V
C032	1-101-004-00	CERAMIC	0.01MF		50V
C033	1-101-004-00	CERAMIC	0.01MF		50V
C034	1-123-318-00	ELECT	33MF	20%	16V
C035	1-102-978-00	CERAMIC	220PF	5%	50V
C036	1-102-959-00	CERAMIC	22PF	5%	50V
C037	1-102-959-00	CERAMIC	22PF	5%	50V
C038	1-101-004-00	CERAMIC	0.01MF		50V
C039	1-101-004-00	CERAMIC	0.01MF		50V
C040	1-161-030-00	CERAMIC	0.0047MF	20%	25V
C041	1-161-013-00	CERAMIC	0.01MF	20%	25V
C042	1-102-959-00	CERAMIC	22PF	5%	50V
C043	1-101-004-00	CERAMIC	0.01MF		50V
C044	1-123-318-00	ELECT	33MF	20%	16V
C045	1-123-318-00	ELECT	33MF	20%	16V (UK, EC MODEL)
C045	1-124-118-00	ELECT	220MF	20%	16V (AEP, E MODEL)
C050	1-123-356-00	ELECT	10MF	20%	50V
C051	1-123-356-00	ELECT	10MF	20%	50V (AEP, E, EC MODEL)
C052	1-123-356-00	ELECT	10MF	20%	16V
C053	1-123-356-00	ELECT	10MF	20%	50V
C054	1-102-973-00	CERAMIC	100PF	5%	50V
C055	1-130-495-51	MYLAR	0.1MF	5%	50V
C056	1-130-493-00	MYLAR	0.068MF	5%	50V
C057	1-130-493-00	MYLAR	0.068MF	5%	50V
C058	1-102-963-00	CERAMIC	33PF	5%	50V
C059	1-123-380-00	ELECT	1MF	20%	50V
C060	1-123-381-00	ELECT	2.2MF	20%	50V
C061	1-102-518-00	CERAMIC	33PF	5%	50V
C062	1-102-518-00	CERAMIC	33PF	5%	50V
C063	1-101-004-00	CERAMIC	0.01MF		50V
C064	1-101-004-00	CERAMIC	0.01MF		50V
C065	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C066	1-101-004-00	CERAMIC	0.01MF		50V (AEP, E, EC MODEL)
C067	1-101-006-00	CERAMIC	0.047MF		50V
C068	1-101-006-00	CERAMIC	0.047MF		50V
C301	1-123-356-00	ELECT	10MF	20%	16V
C302	1-123-321-00	ELECT	220MF	20%	16V
C303	1-123-321-00	ELECT	220MF	20%	16V
C304	1-123-356-00	ELECT	10MF	20%	16V
C305	1-123-356-00	ELECT	10MF	20%	16V
C306	1-130-487-00	MYLAR	0.022MF	5%	50V
C307	1-123-380-00	ELECT	1MF	20%	50V
C308	1-123-380-00	ELECT	1MF	20%	50V
C309	1-123-318-00	ELECT	33MF	20%	16V
C310	1-123-306-00	ELECT	47MF	20%	6.3V
C311	1-130-491-51	MYLAR	0.047MF	5%	50V
C312	1-130-483-00	MYLAR	0.01MF	5%	50V
C313	1-123-318-00	ELECT	33MF	20%	16V
C314	1-123-318-00	ELECT	33MF	20%	16V
C315	1-123-380-00	ELECT	1MF	20%	50V
C316	1-130-471-00	MYLAR	0.001MF	5%	50V
C317	1-123-380-00	ELECT	1MF	20%	50V
C318	1-102-111-00	CERAMIC	270PF	10%	50V
C319	1-130-485-51	MYLAR	0.015MF	5%	50V
C320	1-123-380-00	ELECT	1MF	20%	50V
C321	1-123-369-00	ELECT	4.7MF	20%	25V
C323	1-123-607-00	ELECT	0.1MF	20%	50V
C331	1-123-332-00	ELECT	47MF	20%	16V
C332	1-161-013-00	CERAMIC	0.01MF	10%	25V
C333	1-161-055-00	CERAMIC	0.022MF	10%	25V
C334	1-107-166-00	MICA	62PF	5%	500V
C335	1-129-712-00	FILM	0.0068MF	10%	630V

CERAMIC DISCRIMINATOR

Ref.No	Part No.	Description	Remark
CD001	1-404-380-00	DISCRIMINATOR, CERAMIC 5.5MHZ	(AEP, E, EC MODEL)
CD001	1-404-407-00	DISCRIMINATOR, CERAMIC 6MHZ	(UK MODEL)

FILTER

Ref.No	Part No.	Description	Remark
CF001	1-527-263-00	CERAMIC FILTER (5.5MHZ)	(AEP, E, EC MODEL)
CF001	1-527-262-00	CERAMIC FILTER (6MHZ)	(UK MODEL)

CONNECTOR

Ref.No	Part No.	Description	Remark
CN001	*1-560-893-00	PIN, CONNECTOR 5P	
CN002	*1-560-893-00	PIN, CONNECTOR 5P	
CN003	*1-560-900-00	PIN, CONNECTOR 12P	
CN301	*1-508-797-00	PIN, CONNECTOR 4P	
CN302	*1-560-893-00	PIN, CONNECTOR 5P	
CN303	*1-508-743-00	PIN, CONNECTOR 5P	

TRIMMER

Ref.No	Part No.	Description	Remark
CT001	1-404-134-00	TRAP, CERAMIC (5.5MHZ)	(AEP, E, EC MODEL)
CT001	1-409-333-00	TRAP, CERAMIC (6MHZ)	(UK MODEL)

CERAMIC

Ref.No	Part No.	Description	Remark
CX001	1-527-822-00	OSCILLATOR, CERAMIC	

DIODE

Ref.No	Part No.	Description	Remark
D001	8-719-812-31	DIODE TLR123	
D002	8-719-812-32	DIODE TLY123	
D003	8-719-812-33	DIODE TLG123A	
D004	8-719-911-19	DIODE 1SS119	
D008	8-719-911-19	DIODE 1SS119	(UK MODEL)
D009	8-719-911-19	DIODE 1SS119	(EC MODEL)
D010	8-719-812-31	DIODE TLR123	
D011	8-719-812-31	DIODE TLR123	
D013	8-719-911-19	DIODE 1SS119	
D301	8-719-911-19	DIODE 1SS119	

When indicating parts by reference number, please include the board name.

TA-22

Ref.No	Part No.	Description	Remark
D302	8-719-911-19	DIODE 1SS119	
D303	8-719-000-12	DIODE MC931	
D304	8-719-911-19	DIODE 1SS119	

IC

Ref.No	Part No.	Description	Remark
IC001	8-759-276-07	IC TA7607AP	
IC002	8-759-193-91	IC UPC1391H	
IC003	8-759-800-12	IC LA7920 (AEP, E, EC MODEL)	
IC004	8-759-157-40	IC UPC574J	
IC005	8-759-602-05	IC M50160-019SP	
IC006	8-759-600-66	IC M58653P	
IC301	8-752-006-10	IC CX20061	
IC302	8-759-101-73	IC UPC1513HA	
IC303	8-759-911-23	IC BA5115	

COIL

Ref.No	Part No.	Description	Remark
L001	1-408-591-00	MICRO INDUCTOR 1UH	
L002	1-408-600-00	MICRO INDUCTOR 5.6UH	
L003	1-408-600-00	MICRO INDUCTOR 5.6UH	
L004	1-408-615-00	MICRO INDUCTOR 100UH	
L005	1-408-603-00	MICRO INDUCTOR 10UH	
L006	1-408-599-00	MICRO INDUCTOR 4.7UH	
L007	1-408-606-00	MICRO INDUCTOR 18UH	
L008	1-408-607-00	MICRO INDUCTOR 22UH	
L009	1-407-177-XX	MICRO INDUCTOR 470UH (EC MODEL)	
L301	1-407-963-00	MICRO INDUCTOR 15MMH	
L302	1-408-221-00	MICRO INDUCTOR 22MMH	
L331	1-407-710-00	MICRO INDUCTOR 270UH	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q001	8-729-203-28	TRANSISTOR 2SC2216	
Q002	8-729-245-83	TRANSISTOR 2SC2458	
Q003	8-729-245-83	TRANSISTOR 2SC2458	
Q004	8-729-113-32	TRANSISTOR 2SB733	
Q005	8-729-603-50	TRANSISTOR 2SC403SP	
Q006	8-729-245-83	TRANSISTOR 2SC2458	
Q007	8-729-245-83	TRANSISTOR 2SC2458	
Q008	8-729-204-83	TRANSISTOR 2SA1048-GR	
Q301 ⚠	8-729-178-54	TRANSISTOR 2SC2785	
Q302	8-729-245-83	TRANSISTOR 2SC2458	
Q303	8-729-245-83	TRANSISTOR 2SC2458	
Q331	8-729-173-37	TRANSISTOR 2SA733-P	
Q332	8-729-967-32	TRANSISTOR 2SC2673	

RESISTOR

Ref.No	Part No.	Description	Remark
R001	1-247-847-00	CARBON 4.7K 5% 1/6W	
R002	1-247-839-00	CARBON 2.2K 5% 1/6W	
R003	1-247-815-00	CARBON 220 5% 1/6W	
R004	1-247-813-00	CARBON 180 5% 1/6W	
R005	1-247-819-00	CARBON 330 5% 1/6W	
R006	1-247-837-00	CARBON 1.8K 5% 1/6W	
R007	1-247-835-00	CARBON 1.5K 5% 1/6W	
R008	1-247-839-00	CARBON 2.2K 5% 1/6W	
R009	1-247-877-00	CARBON 82K 5% 1/6W	
R010	1-247-867-00	CARBON 33K 5% 1/6W	
R011	1-247-879-00	CARBON 100K 5% 1/6W	
R012	1-247-879-00	CARBON 100K 5% 1/6W	
R013	1-247-901-00	CARBON 820K 5% 1/6W	
R014	1-247-863-00	CARBON 22K 5% 1/6W	
R015	1-247-855-00	CARBON 10K 5% 1/6W	
R016	1-247-829-00	CARBON 820 5% 1/6W	
R018	1-247-831-00	CARBON 1K 5% 1/6W	
R019	1-247-813-00	CARBON 180 5% 1/6W	
R020	1-247-807-00	CARBON 100 5% 1/6W	
R021	1-247-831-00	CARBON 1K 5% 1/6W	
R022	1-247-829-00	CARBON 820 5% 1/6W	
R024	1-247-831-00	CARBON 1K 5% 1/6W	
R025	1-247-831-00	CARBON 1K 5% 1/6W	
R026	1-247-817-00	CARBON 270 5% 1/6W	
R027	1-247-847-00	CARBON 4.7K 5% 1/6W	
R028	1-247-821-00	CARBON 390 5% 1/6W	
R031 ⚠	1-212-849-00	FUSIBLE 4.7 5% 1/4W	F
R032 ⚠	1-213-146-00	METAL OXIDE 1.8K 5% 1W	F
R033	1-247-851-00	CARBON 6.8K 5% 1/6W	
R034	1-247-865-00	CARBON 27K 5% 1/6W	(AEP, E, EC MODEL)
R035	1-247-855-00	CARBON 10K 5% 1/6W	(AEP, E, EC MODEL)
R036	1-247-879-00	CARBON 100K 5% 1/6W	(AEP, E, EC MODEL)
R037	1-247-879-00	CARBON 100K 5% 1/6W	(EC MODEL)
R038	1-247-839-00	CARBON 2.2K 5% 1/6W	(AEP, E, EC MODEL)
R039	1-247-835-00	CARBON 1.5K 5% 1/6W	(AEP, E, EC MODEL)
R040	1-247-833-00	CARBON 1.2K 5% 1/6W	(AEP, E, EC MODEL)
R042 ⚠	1-213-146-00	METAL OXIDE 1.8K 5% 1W	F
R043	1-247-863-00	CARBON 22K 5% 1/6W	
R044	1-247-863-00	CARBON 22K 5% 1/6W	
R045	1-247-863-00	CARBON 22K 5% 1/6W	
R046	1-247-863-00	CARBON 22K 5% 1/6W	
R047	1-247-863-00	CARBON 22K 5% 1/6W	
R048	1-247-891-00	CARBON 330K 5% 1/6W	
R049	1-247-839-00	CARBON 2.2K 5% 1/6W	
R050	1-247-851-00	CARBON 6.8K 5% 1/6W	
R051	1-247-843-00	CARBON 3.3K 5% 1/6W	
R052	1-247-815-00	CARBON 220 5% 1/6W	
R055	1-247-863-00	CARBON 22K 5% 1/6W	
R059	1-247-863-00	CARBON 22K 5% 1/6W	
R060	1-247-863-00	CARBON 22K 5% 1/6W	
R061	1-247-863-00	CARBON 22K 5% 1/6W	
R062	1-247-863-00	CARBON 22K 5% 1/6W	
R063	1-247-831-00	CARBON 1K 5% 1/6W	
R064	1-247-831-00	CARBON 1K 5% 1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R068	1-247-847-00	CARBON	4.7K	5%	1/6W	
R069	1-247-863-00	CARBON	22K	5%	1/6W	
R070	1-247-855-00	CARBON	10K	5%	1/6W	
R071	1-247-855-00	CARBON	10K	5%	1/6W	
R073	1-247-853-00	CARBON	8.2K	5%	1/6W	(UK, EC MODEL)
R074	1-247-847-00	CARBON	4.7K	5%	1/6W	
R075	1-247-847-00	CARBON	4.7K	5%	1/6W	
R302	1-247-879-00	CARBON	100K	5%	1/6W	
R303	1-247-833-00	CARBON	1.2K	5%	1/6W	
R304	1-247-839-00	CARBON	2.2K	5%	1/6W	
R305	1-247-875-00	CARBON	68K	5%	1/6W	
R306	1-247-837-00	CARBON	1.8K	5%	1/6W	
R308	1-247-871-00	CARBON	47K	5%	1/6W	
R310	1-247-843-00	CARBON	3.3K	5%	1/6W	
R311	1-247-855-00	CARBON	10K	5%	1/6W	
R312	1-247-871-00	CARBON	47K	5%	1/6W	
R313	1-247-855-00	CARBON	10K	5%	1/6W	
R314	1-247-875-00	CARBON	68K	5%	1/6W	
R315	1-210-825-00	SOLID	3.3M	5%	1/4W	
R316	1-247-883-00	CARBON	150K	5%	1/6W	
R317	1-247-863-00	CARBON	22K	5%	1/6W	
R318	1-247-875-00	CARBON	68K	5%	1/6W	
R319	1-247-859-00	CARBON	15K	5%	1/6W	
R320	1-247-891-00	CARBON	330K	5%	1/6W	
R321	1-247-827-00	CARBON	680	5%	1/6W	
R322	1-247-887-00	CARBON	220K	5%	1/6W	
R323	1-247-863-00	CARBON	22K	5%	1/6W	
R324	1-247-841-00	CARBON	2.7K	5%	1/6W	
R325	1-247-859-00	CARBON	15K	5%	1/6W	
R326	1-247-819-00	CARBON	330	5%	1/6W	
R327	1-247-871-00	CARBON	47K	5%	1/6W	
R328	1-247-783-00	CARBON	10	5%	1/6W	
R329	1-247-875-00	CARBON	68K	5%	1/6W	
R330 ⚠	1-246-873-11	CARBON	22	5%	1/4W	F
R331	1-247-867-00	CARBON	33K	5%	1/6W	
R332	1-247-847-00	CARBON	4.7K	5%	1/6W	
R333	1-247-859-00	CARBON	15K	5%	1/6W	
R334 ⚠	1-246-980-00	CARBON	3.3	5%	1/8W	F
R335	1-247-855-00	CARBON	10K	5%	1/6W	
R336	1-247-901-00	CARBON	820K	5%	1/6W	

BARIABLE RESISTOR

Ref.No	Part No.	Description
RV001	1-228-746-00	RES, ADJ, CARBON 2.2K
RV301	1-228-749-00	RES, ADJ, CARBON 22K
RV331	1-228-998-00	RES, ADJ, METAL GLAZE 220K

SWITCH

Ref.No	Part No.	Description
S001	1-553-997-00	SWITCH, KEY BOARD
S002	1-553-997-00	SWITCH, KEY BOARD
S003	1-553-997-00	SWITCH, KEY BOARD
S004	1-553-997-00	SWITCH, KEY BOARD
S005	1-553-997-00	SWITCH, KEY BOARD
S006	1-553-997-00	SWITCH, KEY BOARD
S007	1-553-997-00	SWITCH, KEY BOARD

FILTER

Ref.No	Part No.	Description
SF001	1-404-345-00	SAWF (UK MODEL)
SF001	1-404-433-00	SAWF (AEP, E, EC MODEL)

TRANSFORMER

Ref.No	Part No.	Description
T001	1-404-476-00	COIL, IF
T002	1-404-476-00	COIL, IF
T003	1-404-428-00	VIFT
T004	1-404-427-00	VIFT
T005	1-404-427-00	VIFT
T331	1-433-275-00	TRANSFORMER, BIAS OSCILLATOR

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*1-613-234-11 MT-10 BOARD
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TUNER

Ref.No	Part No.	Description
TU001 ⚠	1-463-350-12	TUNER, (BT-881) (AEP, E MODEL)
TU001 ⚠	1-463-371-12	TUNER, (BT-882) (UK MODEL)
TU001 ⚠	1-463-421-11	TUNER, ET (BT-883) (EC MODEL)

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*1-613-233-12 RD-21 BOARD
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DIODE

Ref.No	Part No.	Description
PC101	8-719-913-41	DIODE SPI201-22

RESISTOR

Ref.No	Part No.	Description			
R101	1-247-815-00	CARBON	220	5%	1/6W
R102	1-247-867-00	CARBON	33K	5%	1/6W
R103	1-247-859-00	CARBON	15K	5%	1/6W

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*1-613-232-12 RD-20 BOARD
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DIODE

Ref.No	Part No.	Description
PC001	8-719-913-41	DIODE SPI201-22

RESISTOR

Ref.No	Part No.	Description			
R001	1-247-815-00	CARBON	220	5%	1/6W
R002	1-247-867-00	CARBON	33K	5%	1/6W
R003	1-247-859-00	CARBON	15K	5%	1/6W

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The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
	*1-606-794-00	N BOARD ********				
		CAPACITOR				
C001	1-123-617-00	ELECT	10MF	20%	16V	
C002	1-123-617-00	ELECT	10MF	20%	16V	
C003	1-123-617-00	ELECT	10MF	20%	16V	
C004	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C005	1-106-184-00	MYLAR	0.0033MF	5%	50V	
C006	1-123-821-00	ELECT	47MF	20%	16V	
		DIODE				
D001	8-719-110-32	DIODE PH302B				
		IC				
IC001	8-759-102-84	IC UPC1373HA				
		COIL				
L001	1-404-310-00	COIL				

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Ref.No	Part No.	Description				Remark
	*1-613-227-12	PS-45 BOARD (AEP, UK, EC MODEL) **********************************				
	1-533-162-00	HOLDER, FUSE				
		CAPACITOR				
C001	⚠1-130-710-00	FILM	0.1MF	20%	250V	
C002	1-125-298-00	ELECT(BLOCK)	10000MF	20%	25V	
C003	1-123-332-00	ELECT	47MF	20%	16V	
C004	1-123-332-00	ELECT	47MF	20%	16V	
		CONNECTOR				
CN001	*1-560-893-00	PIN, CONNECTOR 5P				
CN002	*1-560-890-00	PIN, CONNECTOR 2P				
		DIODE				
D001	⚠8-719-505-20	DIODE S5VB20				
		FUSE				
F001	⚠1-532-203-11	FUSE, TIME-LAG T2A 250V				
F002	⚠1-532-350-11	FUSE, TIME-LAG T4A 250V				
F003	⚠1-532-203-11	FUSE, TIME-LAG T2A 250V (UK MODEL)				
		RESISTOR				
R001	1-247-823-00	CARBON	470	5%	1/6W	

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Ref.No	Part No.	Description				Remark
	*1-613-228-12	PS-46 BOARD (AEP, UK, EC MODEL) **********************************				
	1-533-162-00	HOLDER, FUSE				
	*3-660-552-00	HEAT SINK				
	7-685-646-71	SCREW +BVTP 3X10 TYPE2 IT-3				
		CAPACITOR				
C101	1-123-375-00	ELECT	220MF	20%	63V	
C102	1-123-375-00	ELECT	220MF	20%	63V	
C103	1-123-330-00	ELECT	22MF	20%	16V	
C104	1-123-330-00	ELECT	22MF	20%	16V	
C105	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C112	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C113	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C115	1-123-332-00	ELECT	47MF	20%	25V	(UK MODEL)
		CONNECTOR				
CN101	*1-560-894-00	PIN, CONNECTOR 6P				
CN102	*1-560-893-00	PIN, CONNECTOR 5P				
CN103	*1-560-891-00	PIN, CONNECTOR 3P				
CN104	*1-560-894-00	PIN, CONNECTOR 6P				
CN105	*1-560-892-00	PIN, CONNECTOR 4P				
CN106	*1-560-891-00	PIN, CONNECTOR 3P				
		DIODE				
D101	8-719-200-02	DIODE 10E2				
D102	8-719-200-02	DIODE 10E2				
D103	8-719-100-39	DIODE RD6.2E-B3				
D105	8-719-200-02	DIODE 10E2				
		FUSE				
F101	⚠1-532-279-11	FUSE, TIME-LAG T500mA 250V				
		TRANSISTOR				
Q101	8-729-316-16	TRANSISTOR 2SC1061				
Q102	8-729-245-83	TRANSISTOR 2SC2458				
Q103	8-729-316-16	TRANSISTOR 2SC1061				
Q104	8-729-178-54	TRANSISTOR 2SC2785				
Q105	8-729-245-83	TRANSISTOR 2SC2458 (UK MODEL)				
Q106	8-729-245-83	TRANSISTOR 2SC2458 (UK MODEL)				
Q107	8-729-177-43	TRANSISTOR 2SD774 (UK MODEL)				
		RESISTOR				
R101	1-244-887-51	CARBON	3.9K	5%	1/2W	
R102	1-244-891-51	CARBON	5.6K	5%	1/2W	
R103	1-247-851-00	CARBON	6.8K	5%	1/6W	
R104	1-247-847-00	CARBON	4.7K	5%	1/6W	
R105	1-247-855-00	CARBON	10K	5%	1/6W	
R106	⚠1-213-144-00	METAL OXIDE	1.2K	5%	1W	F
R107	⚠1-206-477-00	METAL OXIDE	39	5%	2W	F

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R108	1-247-871-00	CARBON	47K	5%	1/6W	(UK MODEL)
R109	1-247-865-00	CARBON	27K	5%	1/6W	(UK MODEL)
R110	1-247-851-00	CARBON	6.8K	5%	1/6W	(UK MODEL)
R111	1-247-783-00	CARBON	10	5%	1/6W	

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*1-613-940-12 PS-69 BOARD (AEP, UK, EC MODEL)

IC

Ref.No	Part No.	Description
IC001	8-749-912-29	IC STR1229

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*A-6729-106-A PS-67 BOARD, COMPLETE (E MODEL)

Ref.No	Part No.	Description
	1-533-162-00	HOLDER, FUSE

CAPACITOR

Ref.No	Part No.	Description			
C001 ⚠	1-130-710-00	FILM	0.1MF	20%	250V
C002	1-161-013-00	CERAMIC	0.01MF	10%	25V
C003	1-161-013-00	CERAMIC	0.01MF	10%	25V
C004	1-124-362-00	ELECT	4700MF	20%	42V
C005	1-123-375-00	ELECT	220MF	20%	63V
C006	1-123-357-00	ELECT	22MF	20%	50V
C007	1-123-375-00	ELECT	220MF	20%	63V
C008	1-123-357-00	ELECT	22MF	20%	50V
C015	1-123-324-00	ELECT	1000MF	20%	16V

CONNECTOR

Ref.No	Part No.	Description
CN001	*1-560-893-00	PIN, CONNECTOR 5P
CN002	*1-560-894-00	PIN, CONNECTOR 6P
CN003	*1-560-891-00	PIN, CONNECTOR 3P
CN004	*1-560-891-00	PIN, CONNECTOR 3P
CN005	*1-560-894-00	PIN, CONNECTOR 6P

DIODE

Ref.No	Part No.	Description
D001 ⚠	8-719-505-10	DIODE S5VB10
D002	8-719-200-02	DIODE 10E2
D003	8-719-101-31	DIODE RD39E-C3
D004	8-719-200-02	DIODE 10E2
D005	8-719-101-31	DIODE RD39E-C3
D006	8-719-100-42	DIODE RD6.8E-B3
D007	8-719-100-42	DIODE RD6.8E-B3
D008	8-719-100-41	DIODE RD6.8E-B2
D009	8-719-911-19	DIODE ISS119

FUSE

Ref.No	Part No.	Description
F001 ⚠	1-532-285-11	FUSE, TEME-LAG T1.25A 250V
F002 ⚠	1-532-350-11	FUSE, TEME-LAG T4A 250V

IC LINK

Ref.No	Part No.	Description	Remark
PS001 ⚠	1-532-679-00	LINK, IC 0.6A	

TRANSISTOR

Ref.No	Part No.	Description
Q001	8-729-177-43	TRANSISTOR 2SD774
Q002	8-729-113-33	TRANSISTOR 2SB733-4
Q003	8-729-103-33	TRANSISTOR 2SD1310
Q004	8-729-204-83	TRANSISTOR 2SA1048-GR
Q005	8-729-177-23	TRANSISTOR 2SB772
Q006	8-729-177-23	TRANSISTOR 2SB772
Q007	8-729-900-36	TRANSISTOR DTC124ES
Q008	8-729-900-36	TRANSISTOR DTC124ES

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-246-485-00	CARBON	3.3K	5%	1/4W	
R002	1-246-485-00	CARBON	3.3K	5%	1/4W	
R004	1-244-822-51	CARBON	7.5	5%	1/2W	
R005 ⚠	1-212-954-51	FUSIBLE	6.8	5%	1/2W	F
R006	1-247-139-00	CARBON	2.2K	5%	1/4W	
R007	1-247-147-00	CARBON	4.7K	5%	1/4W	
R008	1-247-133-00	CARBON	1.2K	5%	1/4W	
R009	1-247-133-00	CARBON	1.2K	5%	1/4W	
R010	1-247-133-00	CARBON	1.2K	5%	1/4W	
R011	1-247-133-00	CARBON	1.2K	5%	1/4W	
R012	1-247-855-00	CARBON	10K	5%	1/6W	
R013	1-247-155-00	CARBON	10K	5%	1/4W	
R014 ⚠	1-213-143-00	METAL OXIDE	1K	5%	1W	F

****

*1-614-195-11 PS-76 BOARD (E MODEL)

CAPACITOR

Ref.No	Part No.	Description			
C009	1-161-025-00	CERAMIC	0.1MF	10%	25V
C010	1-123-346-00	ELECT	220MF	20%	35V
C011	1-123-330-00	ELECT	22MF	20%	16V
C012	1-123-850-51	ELECT	1000MF	20%	16V
C013	1-123-323-00	ELECT	470MF	20%	16V
C014	1-123-333-00	ELECT	100MF	20%	16V

CONNECTOR

Ref.No	Part No.	Description
CN006	*1-560-895-00	PIN, CONNECTOR 7P

FERRITE BEAD

Ref.No	Part No.	Description
FB001	1-543-236-11	BEAD, FERRITE

IC

Ref.No	Part No.	Description
IC001	8-749-972-17	IC STK7217

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

COIL

Ref.No	Part No.	Description	Remark
L002	1-421-701-11	COIL, CHOKE 150UH	
L003	1-408-944-00	COIL, CHOKE	
L004	1-408-944-00	COIL, CHOKE	

RESISTOR

Ref.No	Part No.	Description	Remark
R003	1-247-101-00	CARBON 56 5% 1/4W	

* * *

*1-614-196-11 VS-4 BOARD (E MODEL)

SWITCH

Ref.No	Part No.	Description	Remark
S001	⚠1-553-011-00	SWITCH, POWER VOLTAGE SELECTION	

* * *

*1-605-071-00 LM-8 BOARD

CAPACITOR

Ref.No	Part No.	Description	Remark
C101	1-161-057-00	CERAMIC 0.033MF 10% 50V	
C102	1-161-057-00	CERAMIC 0.033MF 10% 50V	

COIL

Ref.No	Part No.	Description	Remark
L101	1-408-120-00	MICRO INDUCTOR 18UH	
L102	1-408-120-00	MICRO INDUCTOR 18UH	

* * *

MISCELLANEOUS

Ref.No	Part No.	Description	Remark
	A-6761-075-A	ACE ASSY	
	⚠1-464-386-11	BOOSTER MIXER, RF MODULATOR (RFU-819) (AEP MODEL)	
	⚠1-464-386-21	BOOSTER MIXER, RF MODULATOR (RFU-819) (E MODEL)	
	⚠1-464-387-11	BOOSTER MIXER, RF MODULATOR (RFU-820) (UK MODEL)	
	⚠1-464-388-11	BOOSTER MIXER, RF MODULATOR (RFU-821) (EC MODEL)	
	⚠1-551-884-12	CORD, POWER (UK MODEL)	
	⚠1-551-908-11	CORD, POWER (E MODEL)	
	⚠1-551-908-41	CORD, POWER (AEP, EC MODEL)	
	8-825-508-10	HEAD, FE (FULL ERASE HEAD)	
L901	1-464-330-11	SENSOR, S COIL	
L902	1-464-329-11	SENSOR, T COIL	
M902	8-838-080-01	MOTOR, DC (BHF-1908B)(CAPSTAN MOTOR)	
M903	*A-4910-049-A	R STATOR BOARD, COMPLETE (REEL MOTOR)	
M904	X-3679-268-1	MOTOR ASSY, L (LOADING/THREADING)	
PM901	⚠1-454-349-41	SOLENOID, PLUNGER (PINCH)	
PM902	⚠1-454-371-31	SOLENOID, PLUNGER (BRAKE)	
S901	1-554-839-11	SWITCH, LEAF (2 GANG) (REC PROOF/CASSETTE DOWN)	
S903	1-554-840-11	SWITCH, LEAF (THREADING END)	
S904	1-554-840-11	SWITCH, LEAF (CASSETTE ON)	
T901	⚠1-447-894-11	TRANSFORMER, POWER (AEP, UK, EC MODEL)	
T901	⚠1-447-985-11	TRANSFORMER, POWER (E MODEL)	

* * *

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
A-6765-565-A	COMMANDER ASSY RMT-230/SILVER (AEP, E, UK MODEL)	
A-6765-638-A	COMMANDER ASSY RMT-230/GRAY (AEP, E, UK MODEL)	
A-6765-566-A	COMMANDER ASSY RMT-231/SILVER (EC MODEL)	
A-6765-639-A	COMMANDER ASSY RMT-231/GRAY (EC MODEL)	
A-6765-641-A	COMMANDER ASSY RMT-231/RED (EC MODEL)	
1-556-893-00	CORD ASSY, COAXIAL	
3-656-301-00	SCREWDRIVER, CONTROL	
*3-677-503-00	SHEET, PROTECTION	
3-681-287-01	LID, ACCESSORY CASE	
3-684-259-01	CASE, ACCESSORY	
*3-687-580-01	CUSHION (UPPER)	
*3-687-581-01	CUSHION (LOWER)	
*3-687-583-01	INDIVIDUAL CARTON (UK/GRAY MODEL)	
*3-687-587-01	INDIVIDUAL CARTON (EC/GRAY MODEL)	
*3-687-587-11	INDIVIDUAL CARTON (EC/SILVER MODEL)	
*3-687-587-21	INDIVIDUAL CARTON (EC/WHITE MODEL)	
*3-687-587-31	INDIVIDUAL CARTON (EC/RED MODEL)	
*3-687-587-41	INDIVIDUAL CARTON (EC/BLUE MODEL)	
*3-688-401-01	INDIVIDUAL CARTON (E/SILVER MODEL)	
*3-688-402-01	INDIVIDUAL CARTON (AEP/SILVER MODEL)	
*3-688-402-11	INDIVIDUAL CARTON (AEP/GRAY MODEL)	
3-760-103-11	MANUAL, INSTRUCTION (AEP, E, EC MODEL) (ENGLISH, FRENCH, DUTCH, SPANISH)	
3-760-103-61	MANUAL, INSTRUCTION (AEP, EC MODEL) (GARMAN, SWEDISH, ITARIAN)	
3-760-103-71	MANUAL, INSTRUCTION (UK MODEL)(ENGLISH)	

* * *

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7
ADJUSTMENT

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1. PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

1-1. DISASSEMBLY OF CABINET

1) Remove the four case set screws ❶ .
2) Remove the upper case ❷ in the direction shown by the arrow Ⓐ .
3) Loosen the eight screws (BVTP3 x 8) ❸ .
4) Remove the lower case ❹ in the direction shown by the arrow Ⓑ .
5) Remove the three screws (BVTP3 x 8) ❺ .
6) Remove the two claws ❻ in the direction shown by the arrow Ⓒ , then remove the front panel ❼ in the direction shown by the arrow Ⓓ .

Note: Follow the disassembly procedure in the numerical order given.

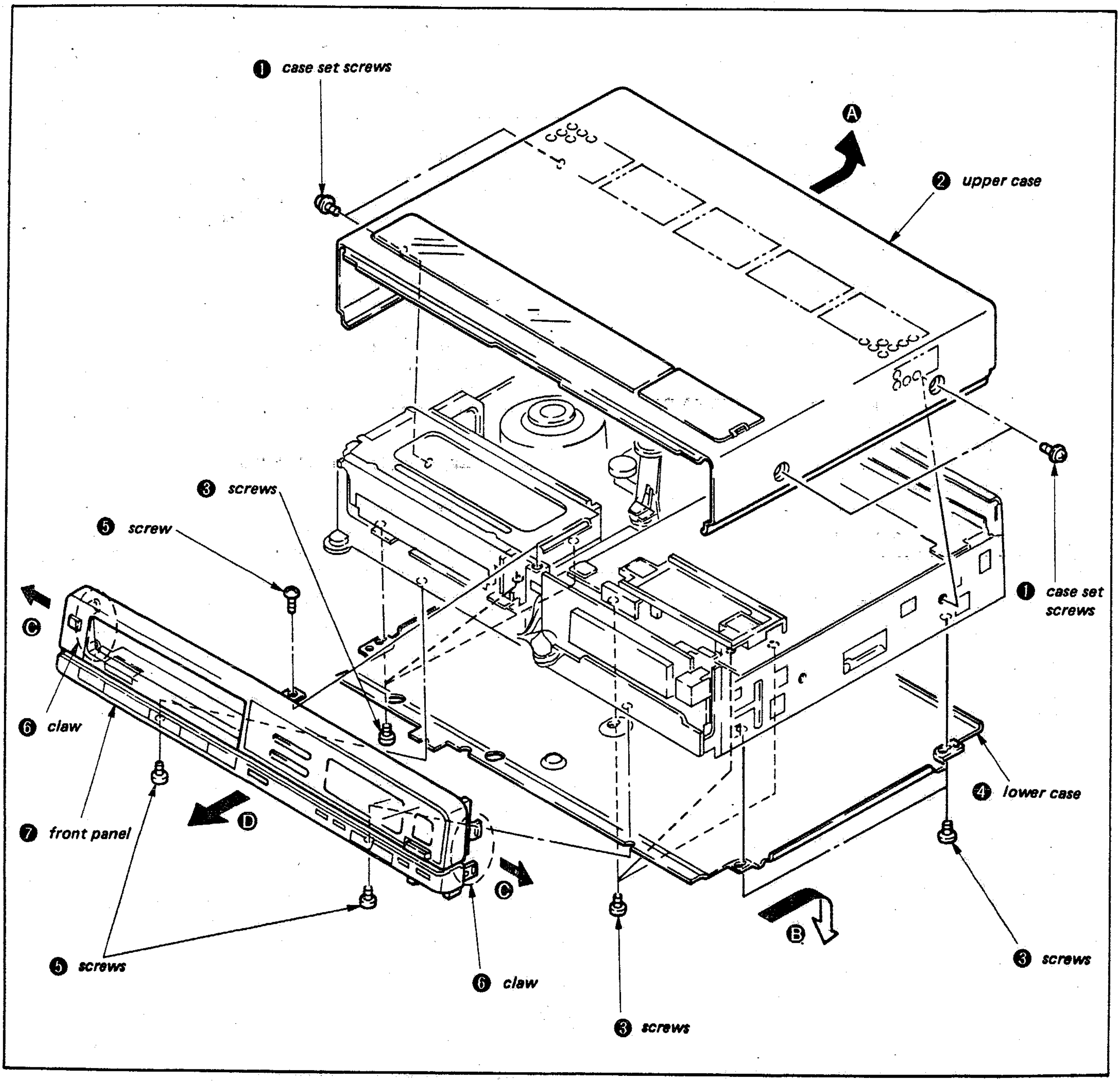
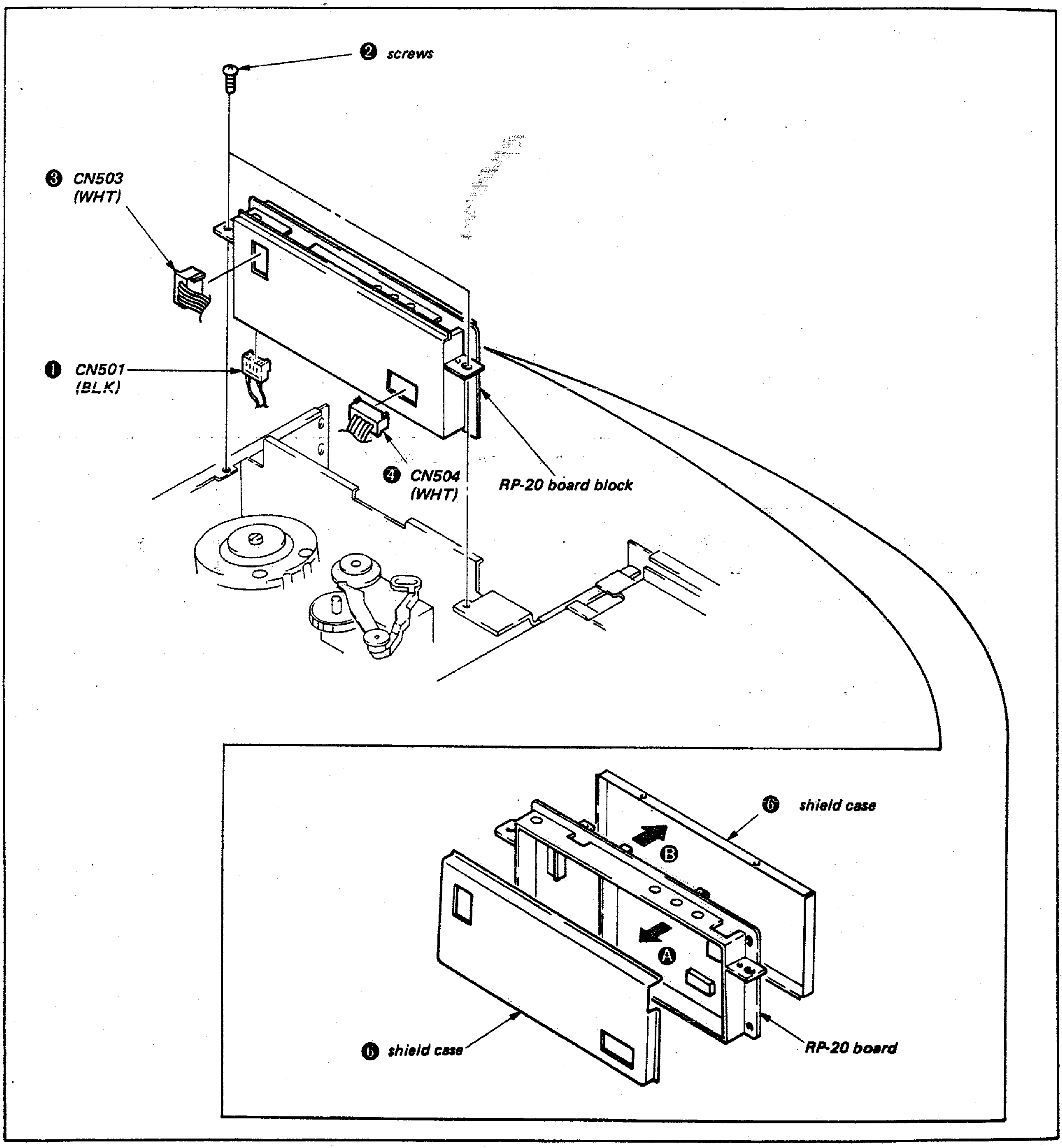

❶ case set screws
Ⓐ
❷ upper case
❸ screws
❺ screw
Ⓒ
❶ case set screws
❻ claw
❹ lower case
❼ front panel
Ⓓ
Ⓒ
Ⓑ
❸ screws
❺ screws
❻ claw
❸ screws

Fig. 1-1. Disassembly of Cabinet

1-2. REMOVAL OF THE RP-20 BOARD

1) Pull out the connector CN501 ❶ .
2) Remove the two screws (BVTP3 x 8) ❷ .
3) Pull out the three connectors (CN503, CN504) ❸ , ❹ .
4) Remove the two shield cases ❻ in the direction shown by the arrows Ⓐ and Ⓑ .



❷ screws
❸ CN503 (WHT)
❶ CN501 (BLK)
❹ CN504 (WHT)
RP-20 board block
❻ shield case
Ⓑ
Ⓐ
❻ shield case
RP-20 board

Fig. 1-2. Removal of the RP-20 Board

1-3. REMOVAL OF THE TA-22 BOARD

1) Remove the two screws (BVTP3 x 8) ❶.
2) Remove the TA-22 board ❷ in the direction shown by the arrow.

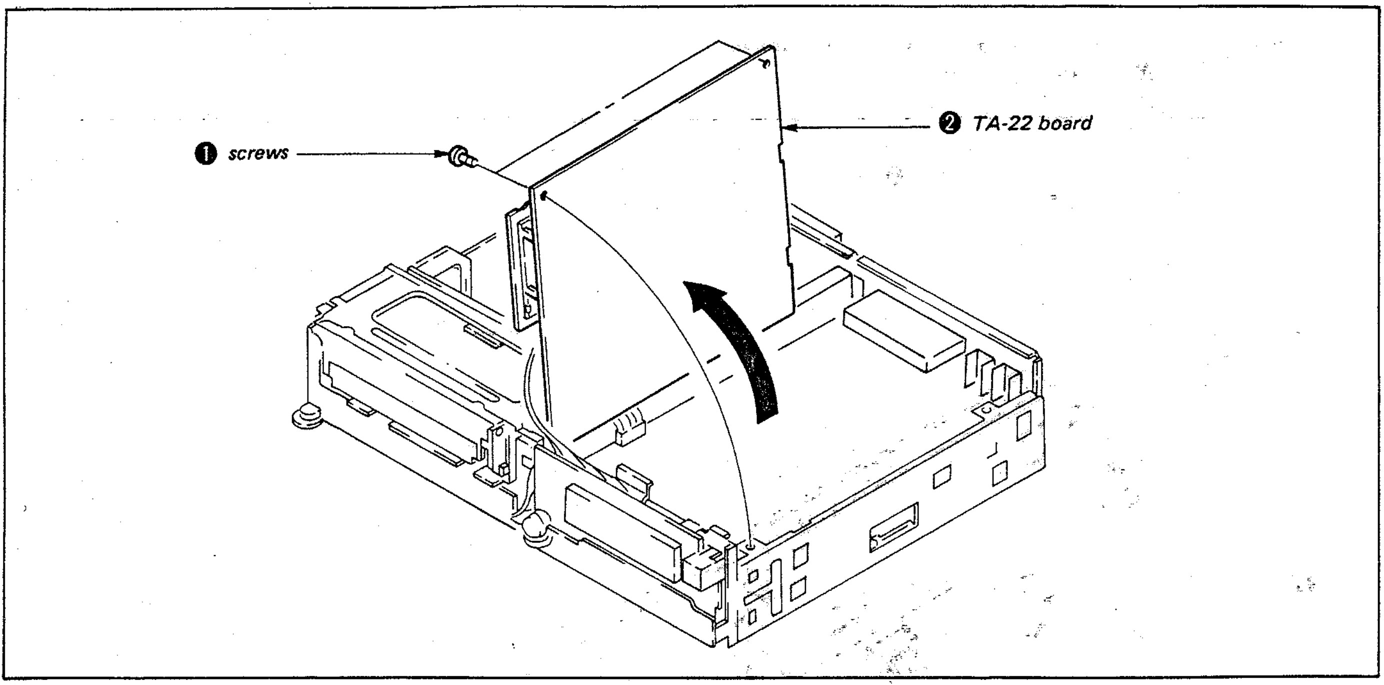

❶ screws
❷ TA-22 board

Fig. 1-3. Removal of the TA-22 Board

1-4. REMOVAL OF THE YC-31 BOARD

1) Stand the set with the left side panel on the bottom.
2) Remove the screw (BVTP3 x 8) ❶.
3) Remove the plate, connector ❷ in the direction shown by the arrow Ⓐ.
4) Remove the two screws (BVTP3 x 8) ❸.
5) Remove the YC-31 board ❹ in the direction shown by the arrow Ⓑ.

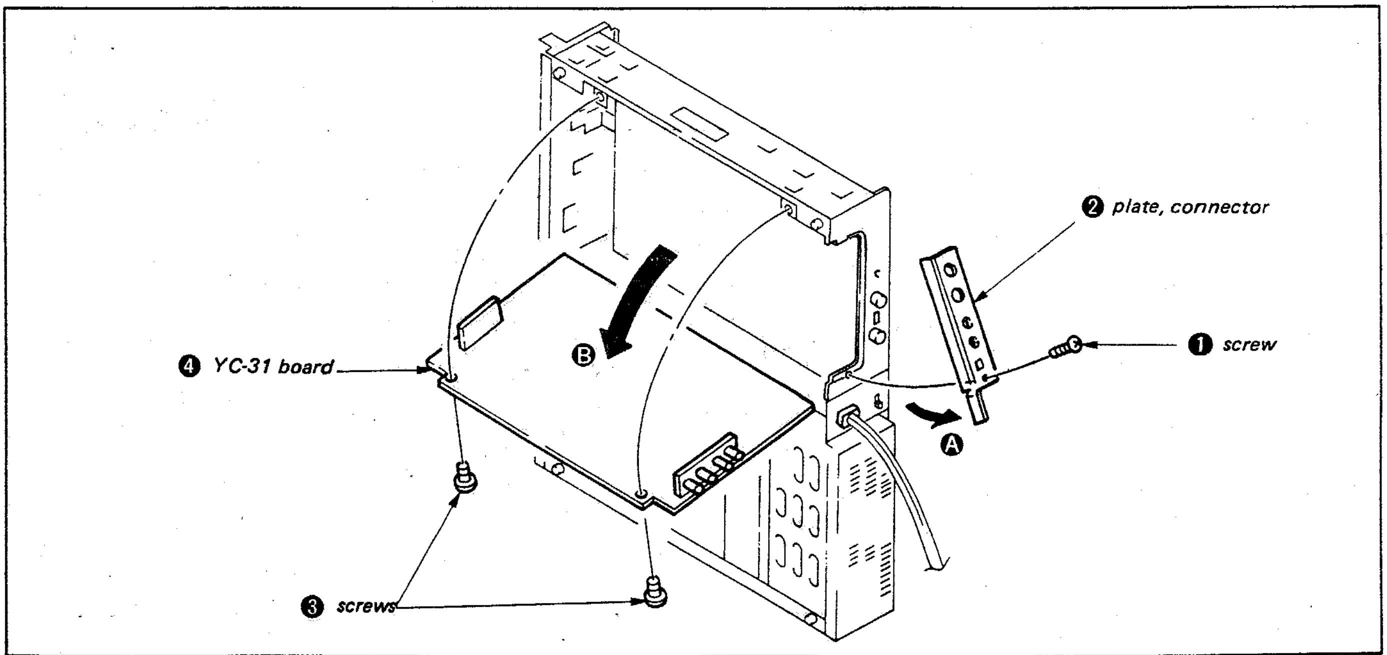

❷ plate, connector
❶ screw
❹ YC-31 board
Ⓑ
Ⓐ
❸ screws

Fig. 1-4. Removal of the YC-31 Board

1-5-1. REMOVAL OF THE POWER BLOCK (AEP, UK, EC MODEL)

1) Remove the six screws (BVTP3 x 8) ❶ .
2) Pull out the five connectors (CN101, CN102, CN103, CN104, CN106) ❷ .
3) Remove the power block ❸ in the direction shown by the arrow.

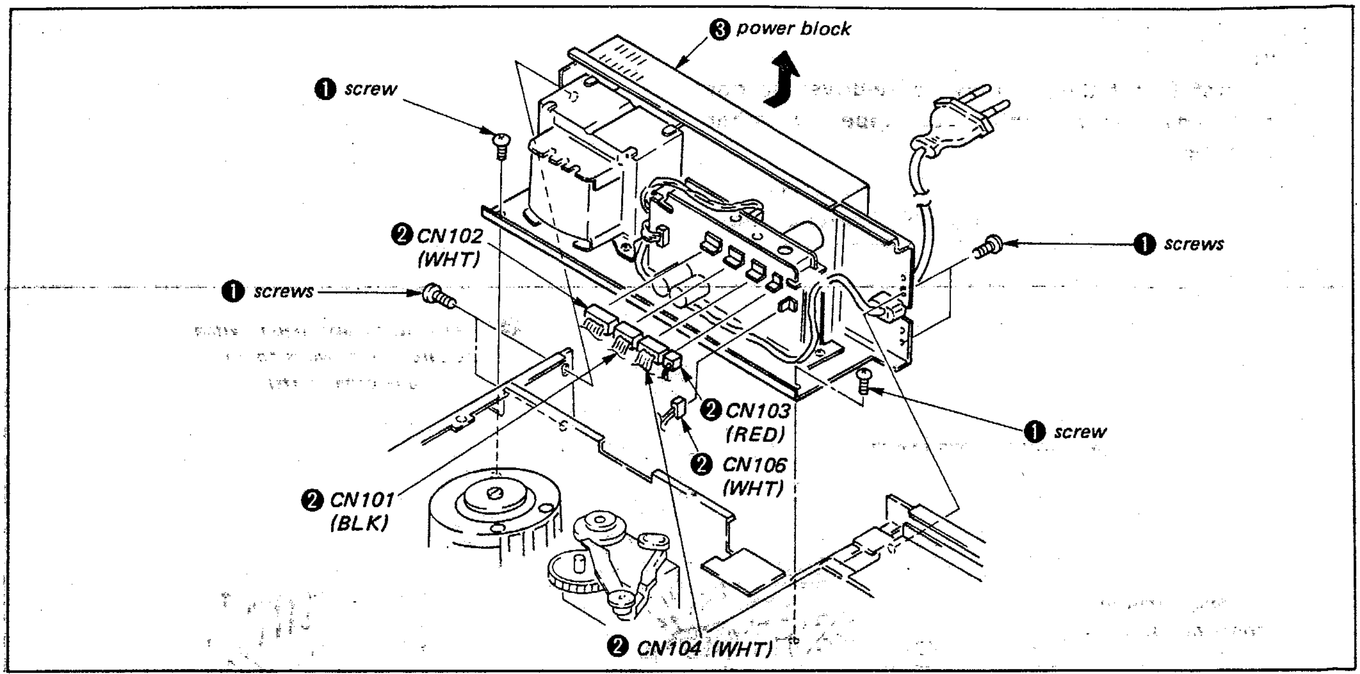

❸ power block
❶ screw
❷ CN102 (WHT)
❶ screws
❶ screws
❷ CN103 (RED)
❶ screw
❷ CN106 (WHT)
❷ CN101 (BLK)
❷ CN104 (WHT)

Fig. 1-5-1. Removal of the power block

1-5-2. REMOVAL OF THE POWER BLOCK (E MODEL)

1) Remove the six screws (BVTP3 x 8) ❶ .
2) Pull out the five connectors (CN001, CN002, CN003, CN004, CN005) ❷ .
3) Remove the power block ❸ in the direction shown by the arrow.

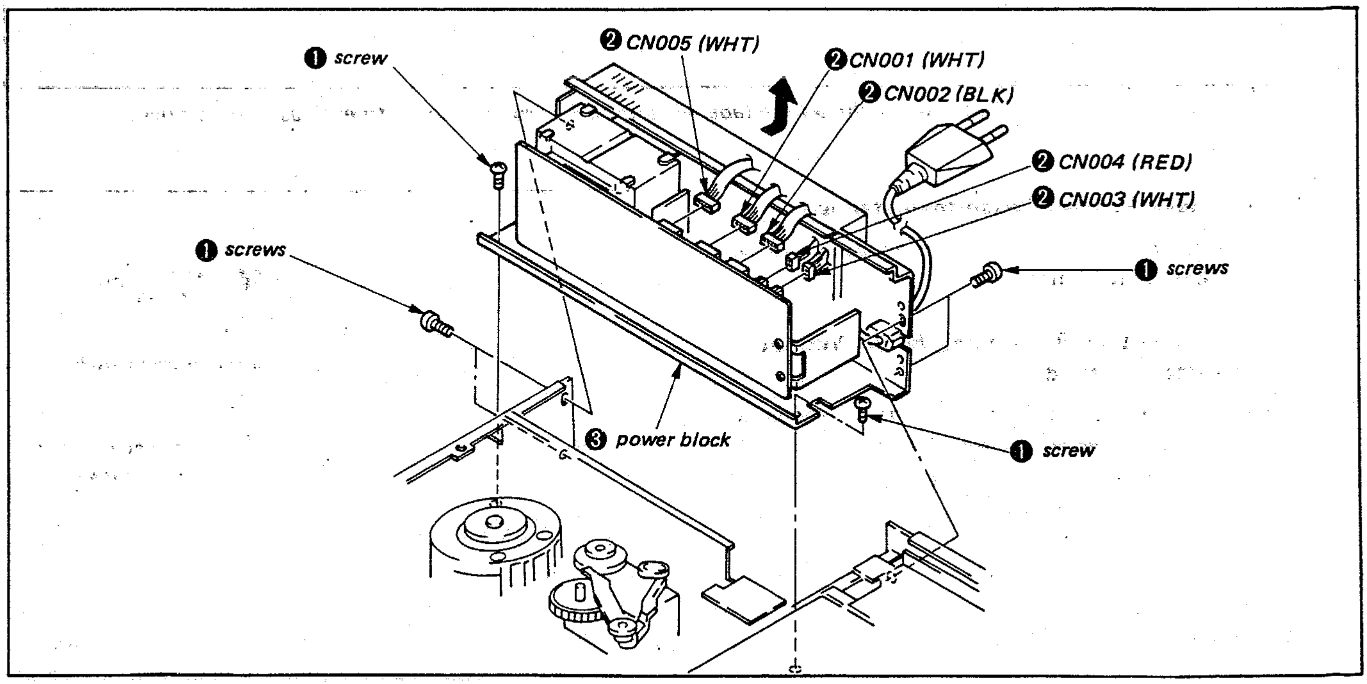

❶ screw
❷ CN005 (WHT)
❷ CN001 (WHT)
❷ CN002 (BLK)
❷ CN004 (RED)
❷ CN003 (WHT)
❶ screws
❶ screws
❸ power block
❶ screw

Fig. 1-5-2. Removal of the power block

1-6. OPERATION OF THE UNIT WITH THE FL CASSETTE COMPARTMENT REMOVED

1-6-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed

1) Connect ordinary screwdriver to short the leaf switch (cassette-on switch).

   Note:

   Be careful that the ordinary screwdriver do not touch any other parts (use tape or other insulation).

2) Press the cassette-down switch and leave it pressed in. When the power button is turned ON, threading starts.

※ Refer to 3-6 for instructions on how to remove the FL cassette compartment.

[How to EJECT in this condition]

- Press the EJECT button. When unthreading is completed and the internal gear starts to turn, turn the power OFF.

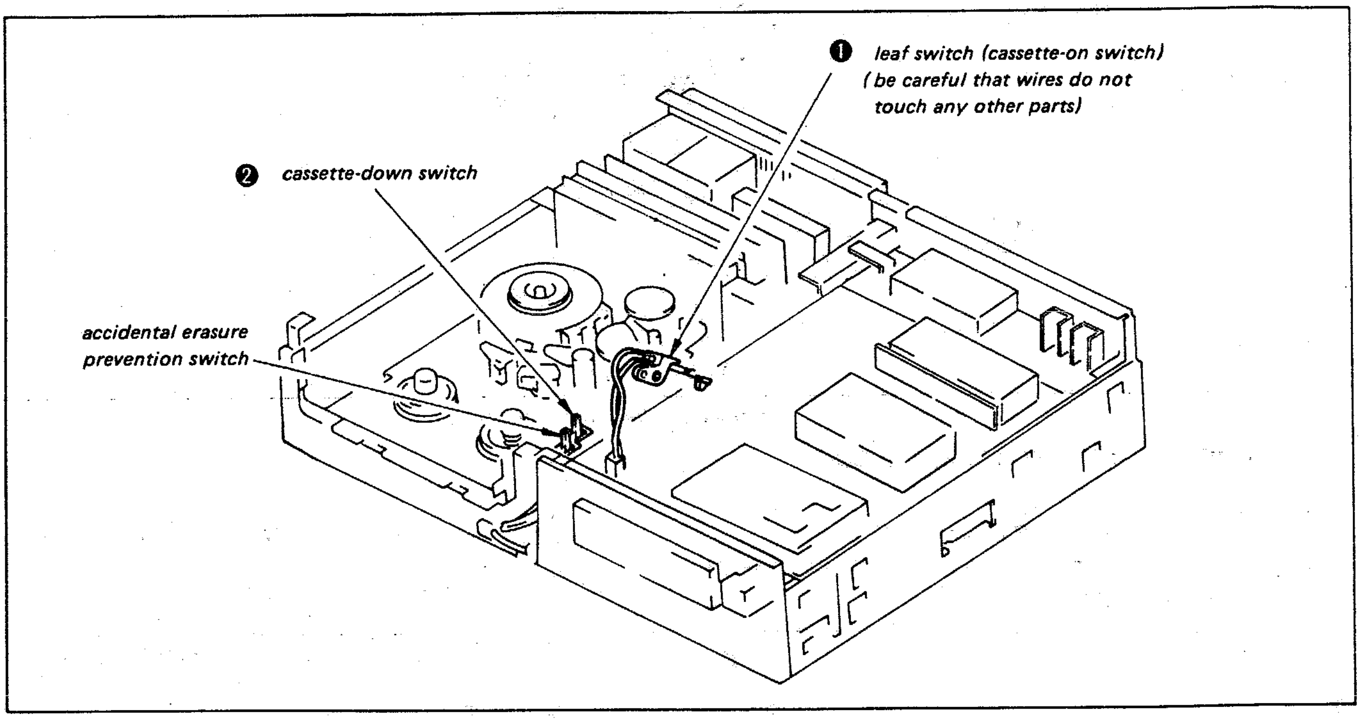

❶ leaf switch (cassette-on switch) (be careful that wires do not touch any other parts)
❷ cassette-down switch
accidental erasure prevention switch

Fig. 1-6. How to thread the tape when the FL cassette compartment has been removed

1-6-2. Playback Without Cassette Installed

Complete threading by the procedure described in 1-6-1, then press the playback button.

1-6-3. How to Put in Recording Mode Without Cassette Installed

1. Thread by the procedure in 1-6-1 then ress the accidental erasure prevention switch shown in Fig. 1-7.
2. With the accidental erasure prevention switch pressed down, press the recording button.

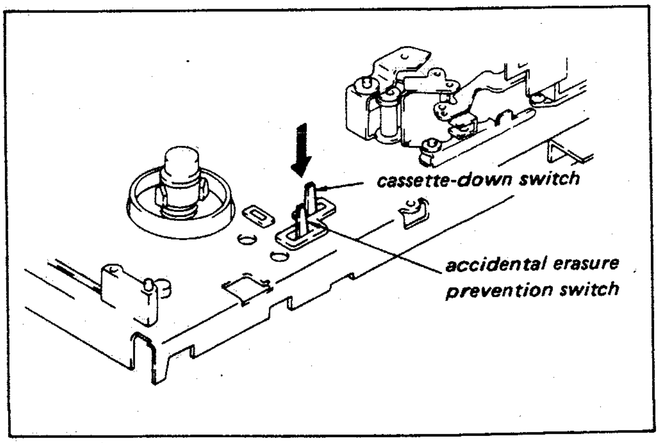

cassette-down switch
accidental erasure prevention switch

Fig. 1-7. How to put the recorder in recording mode with the FL cassette compartment removed

3-9. REPLACEMENT AND ADJUSTMENT OF THE S THREADING RING

3-9-1. Perparation to Remove the S Therading Ring Removal of the ACE Assembly, FE Head and Threading Motor (Fig. 3-18)

1) Remove the cross-recessed head screw.
2) Remove the No. 6 guide nut.
3) Remove the No. 6 washer.
4) Remove the No. 6 guide spacer.
5) Remove the compression coil spring.
6) Remove the 2 guide adjustment screws, then remove the ACE assembly and the FE head.

Note:
Since the ACE assembly and the FE head are connected by a lead wire, be careful when removing them. It is not necessary to remove the compression coil spring below the ACE assembly, but be careful not to use it.

7) Remove the 3 screws, then remove the threading motor assembly by pulling it up and out.

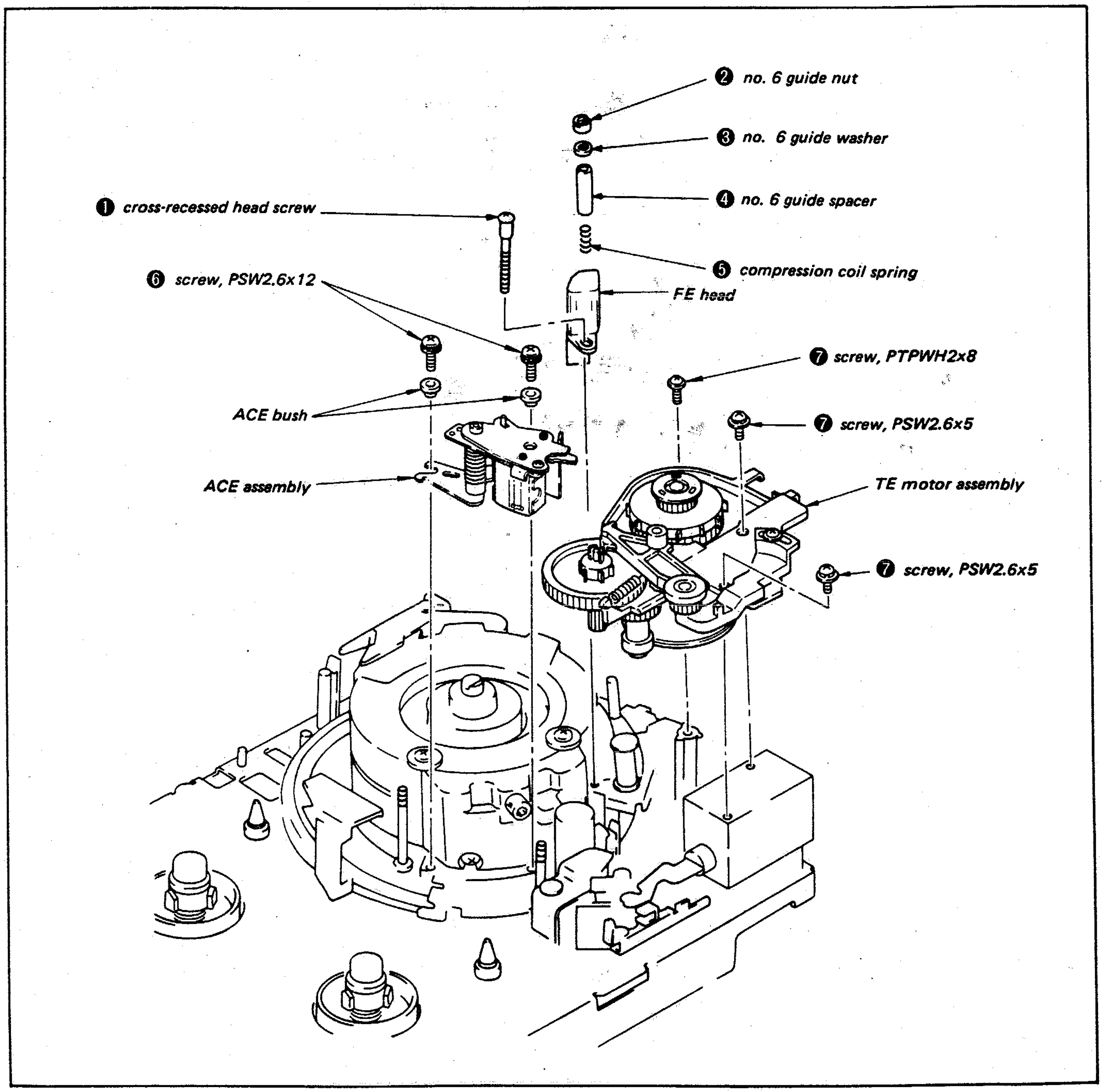

❷ no. 6 guide nut
❸ no. 6 guide washer
❶ cross-recessed head screw
❹ no. 6 guide spacer
❻ screw, PSW2.6x12
❺ compression coil spring
FE head
❼ screw, PTPWH2x8
ACE bush
❼ screw, PSW2.6x5
ACE assembly
TE motor assembly
❼ screw, PSW2.6x5

Fig. 3-18. Removal of the ACE assembly, FE head and TE motor assembly.

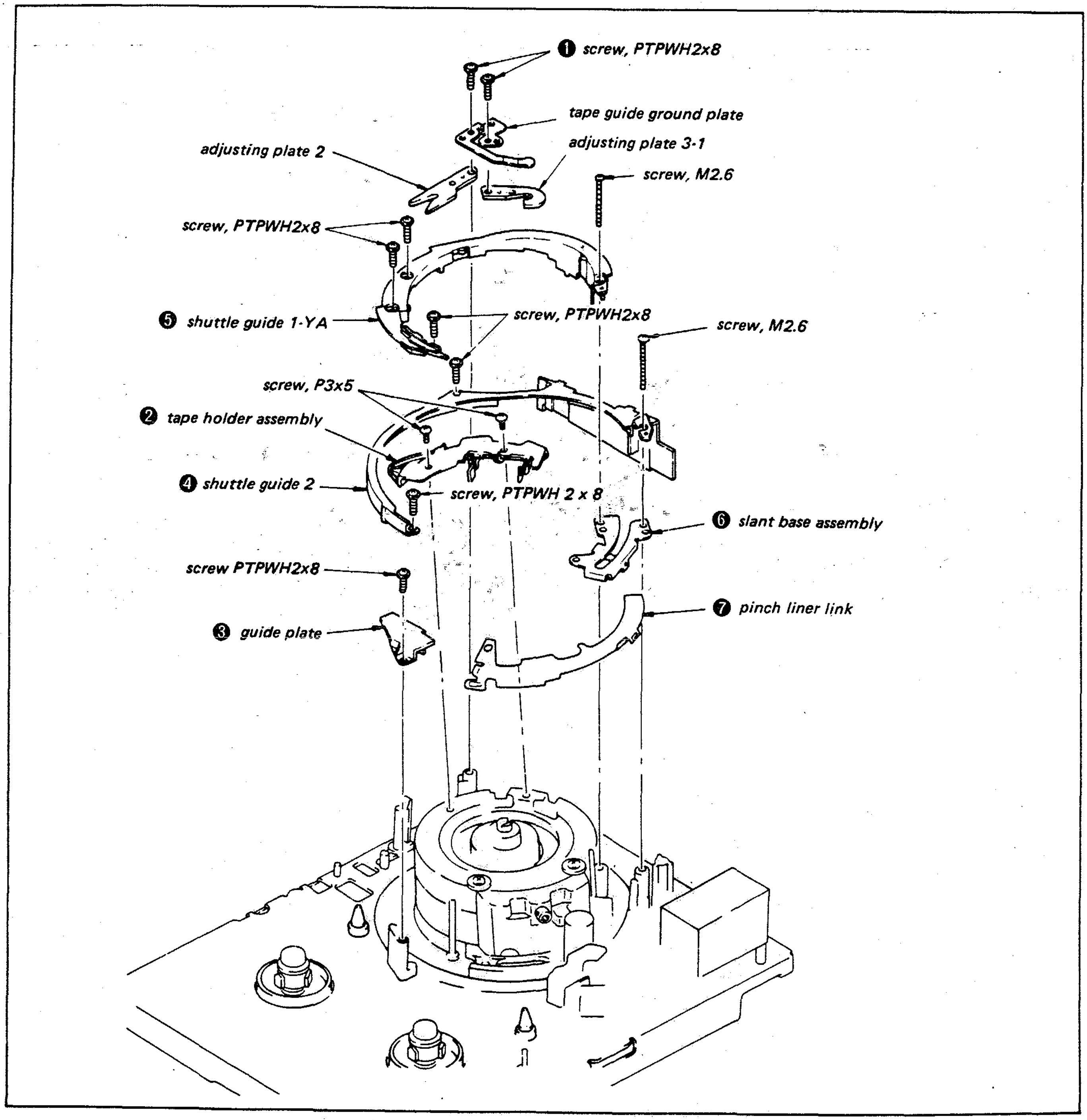
Removal of Miscellaneous Parts (Fig. 3-19)

Proceeding in the same manner as in replacement of the drum assembly, measure the width of the gap between the upper drum and the adjusting plates (Fig. 3-5).

1) Remove the screw, then remove the tape guide ground plate and adjusting plates 1 and 2.
2) Remove the two screws, then remove the tape holder assembly.
3) Remove the screw, then remove the guide plate.
4) Remove the 2 PTPWH2×8 screws and the M2.6 screw, then remove shuttle guide 2.
5) Remove the 3 PTPWH2×8 screws and the M2.6 screw. Then remove the 2 claws holding shuttle guide 1-YA in place, and finally remove shuttle guide 1-YA.
6) Remove the slant base assembly.
7) Remove the BVTT2.6×6 screw, then remove the pinch liner link.

Note:

After removing the guide plate, do not thread or unthread a tape with the shuttle guide mounted.



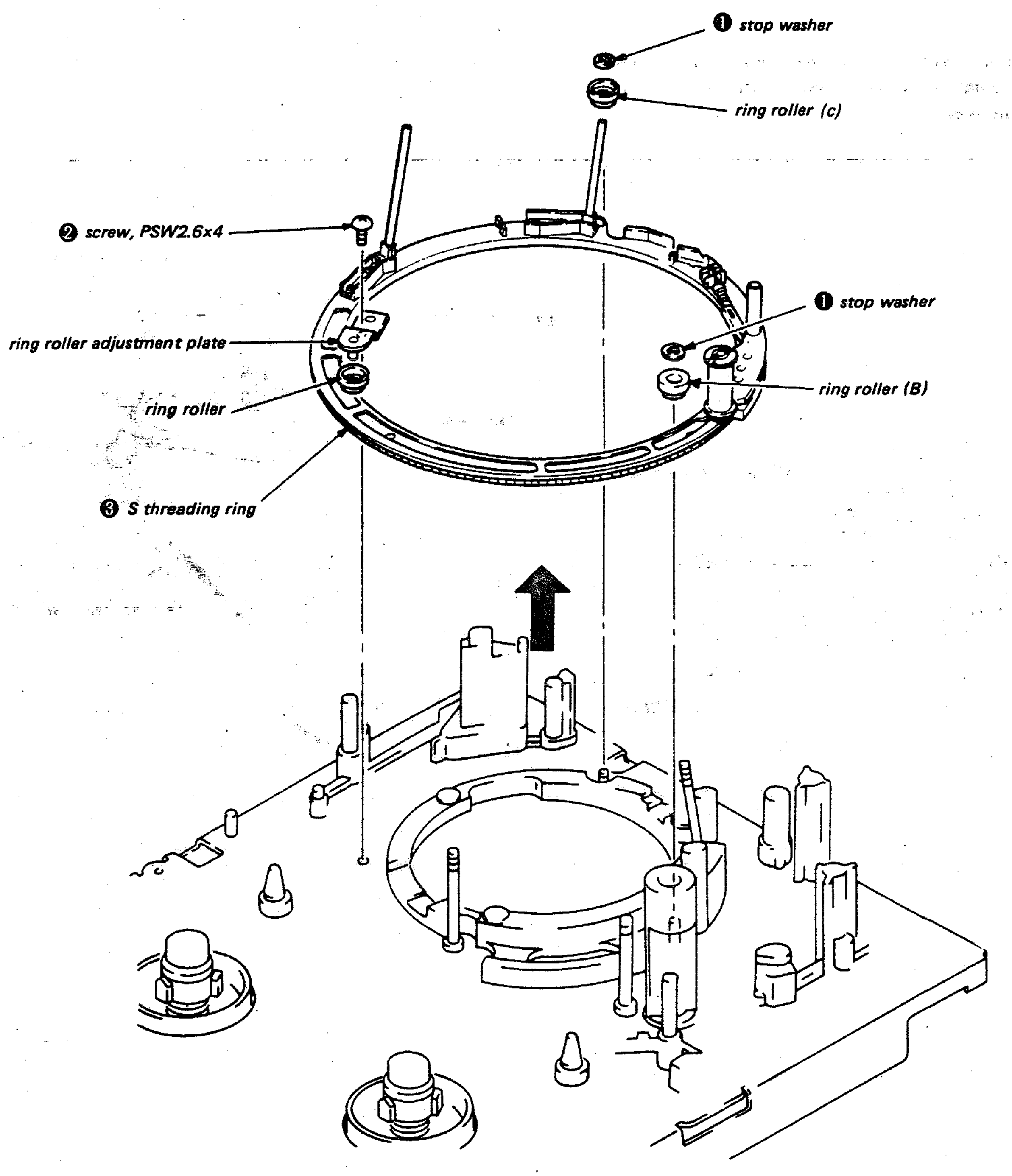
❶ screw, PTPWH2x8
tape guide ground plate
adjusting plate 2
adjusting plate 3-1
screw, M2.6
screw, PTPWH2x8
❺ shuttle guide 1-YA
screw, PTPWH2x8
screw, M2.6
screw, P3x5
❷ tape holder assembly
❹ shuttle guide 2
screw, PTPWH 2 x 8
❻ slant base assembly
screw PTPWH2x8
❼ pinch liner link
❸ guide plate

Fig. 3-19. Removal of miscellaneous parts

3-9-2. Removal of the S Threading Ring (Fig. 3-20)

1) Turn the stop washer and remove the ring roller (B) and (C).
2) Remove the screw. then remove the ring roller adjustment plate.
3) Remove the S threading ring.

Note:
Once a stop washer has been removed, do not use it again.



❶ stop washer
ring roller (c)
❷ screw, PSW2.6x4
❶ stop washer
ring roller adjustment plate
ring roller
ring roller (B)
❸ S threading ring

Fig. 3-20. Removal of the S threading ring

3-9-3. S Threading Ring Mounting and Position Adjustment (Fig. 3-21)

1) Set the slider gear assembly in the unthreading completed position.
(Slider gear assembly set so that it is up against part T slider stop mold.)
2) In this condition, fit the threading ring into place, match the chassis hole (3ϕ) of part Ⓐ with the S threading ring hole (1.5ϕ), and mesh with the drive gear teeth.
3) Attach ring roller (B) and fix in place with a stop washer.
4) Attach the ring roller, and fix in place with the adjustment plate.

Note:
After replacement and mounting are completed, adjust the ACE assembly as explained in the section on tape path adjustment.

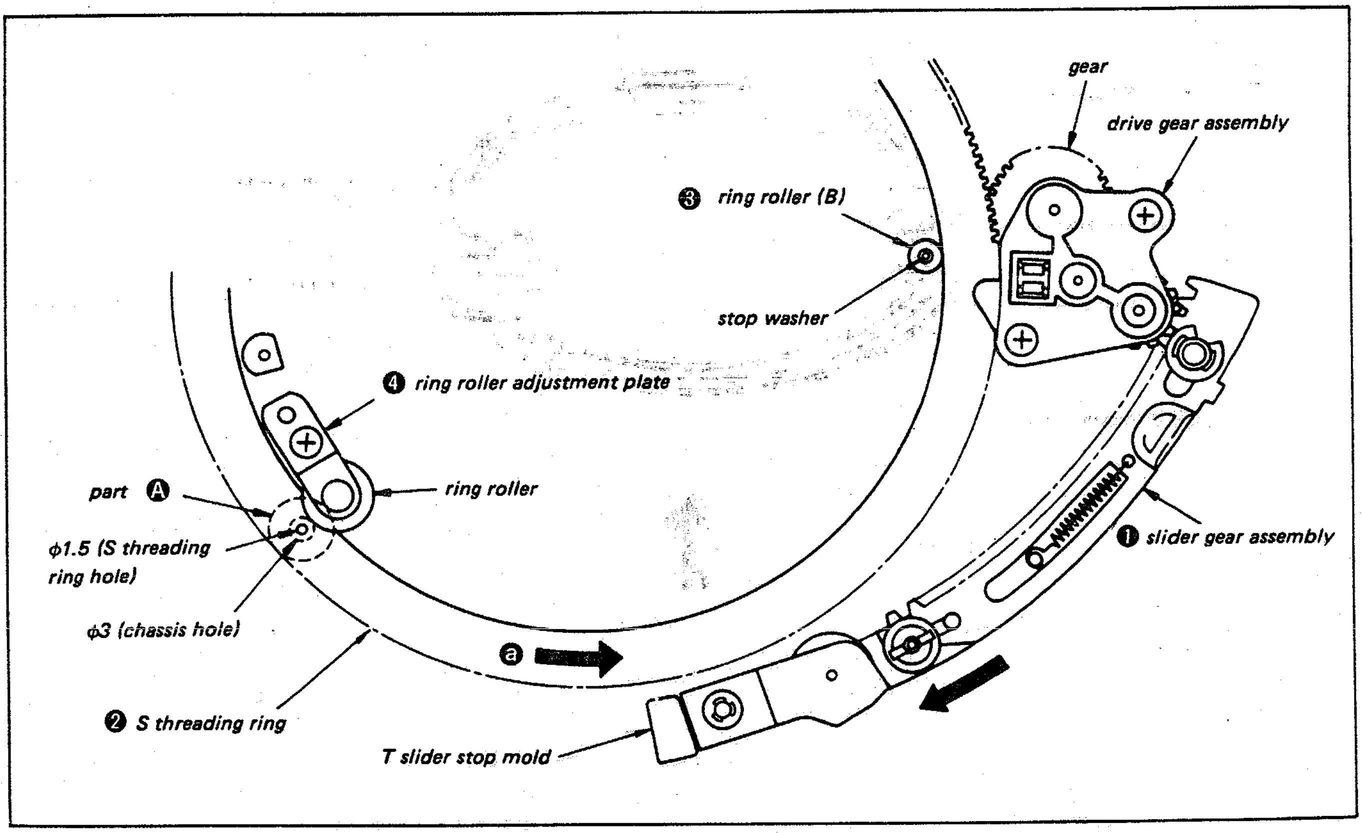

gear
drive gear assembly
❸ ring roller (B)
stop washer
❹ ring roller adjustment plate
part Ⓐ
ring roller
ϕ1.5 (S threading ring hole)
ϕ3 (chassis hole)
ⓐ
❶ slider gear assembly
❷ S threading ring
T slider stop mold

Fig. 3-21. S threading ring position adjustment

3-11-2. T Coil Sensor Mounting and Operation Check

[Method of checking]

Confirm that T coil sensor link ❶ is pressed and T coil sensor ❷ moves in the direction of arrow Ⓑ when the T slider gear assembly is moved in the direction of arrow Ⓐ .

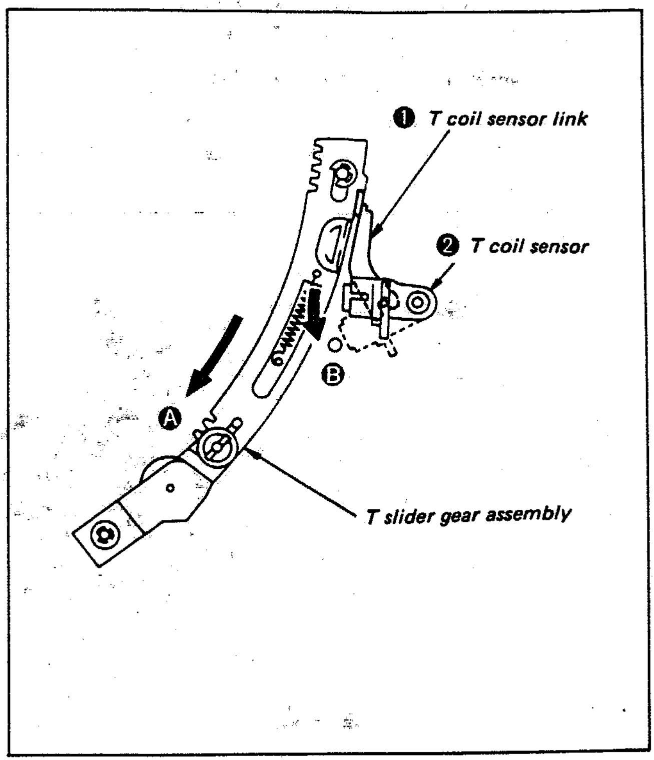

❶ T coil sensor link
❷ T coil sensor
Ⓑ
Ⓐ
T slider gear assembly

Fig. 3-25. T coil sensor operation check.

[Method of mounting]

1) Place T coil sensor link in the prescribed position.
2) Match up the T coil sensor hole with the chassis shaft Ⓐ and insert. Place so that it engages with T coil sensor link.
3) Hook the tension coil spring on the T coil sensor and chassis claw.

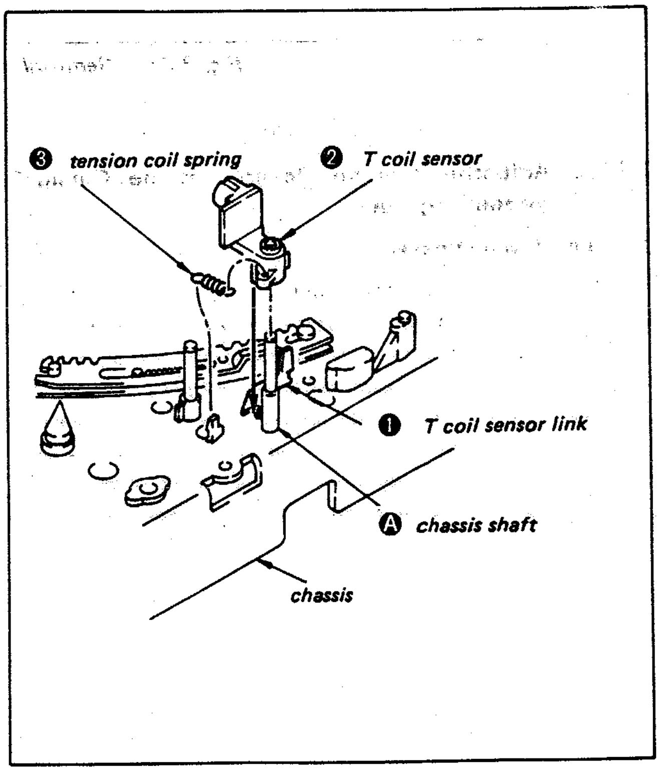
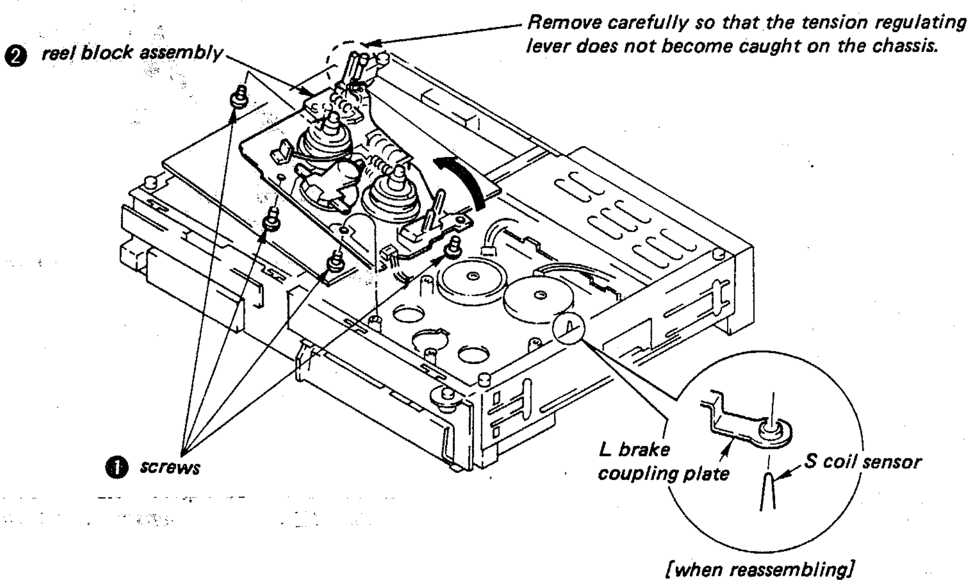

❸ tension coil spring
❷ T coil sensor
❶ T coil sensor link
Ⓐ chassis shaft
chassis

Fig. 3-26 T coil sensor link and T coil sensor mounting.

3-12. REMOVAL AND ADJUSTMENT OF THE REEL BLOCK ASSEMBLY

3-12-1. Removal of the Reel Block Assembly

1) Remove the four screws (BVTP3 x 8) ❶ .
2) Remove the reel block assembly ❷ in the direction shown by the arrow.


❷ reel block assembly
❶ screws
L brake coupling plate
S coil sensor
[when reassembling]

Remove carefully so that the tension regulating lever does not become caught on the chassis.

Fig. 3-27 Removal of the reel block assembly

3-12-2. Adjustment of the Position of the Tension Regulating Lever

[Method of adjustment]

1) Put the unit in playback mode.
2) Loosen the adjustment spring until the tape guide pin of the tension regulating lever assembly is positioned to the outside of the outer circumference of shuttle guide 2. as shown in Fig. 3-28. Then adjust by moving the tension regulating band assembly in the direction of arrow Ⓐ .
3) After adjustment. tighten the adjustment screw. being careful that the tension regulating band assembly does not move.

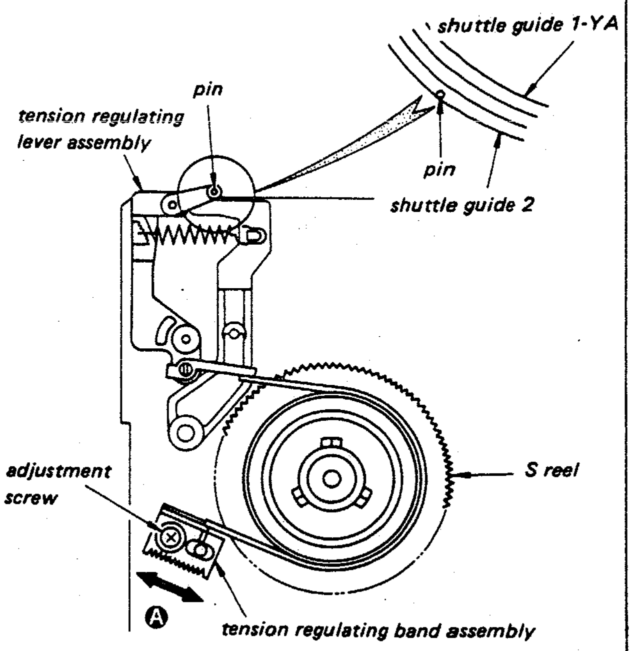

shuttle guide 1-YA
pin
tension regulating lever assembly
pin
shuttle guide 2
S reel
adjustment screw
Ⓐ
tension regulating band assembly

Fig. 3-28 Adjustment of the position of the tension regulating lever

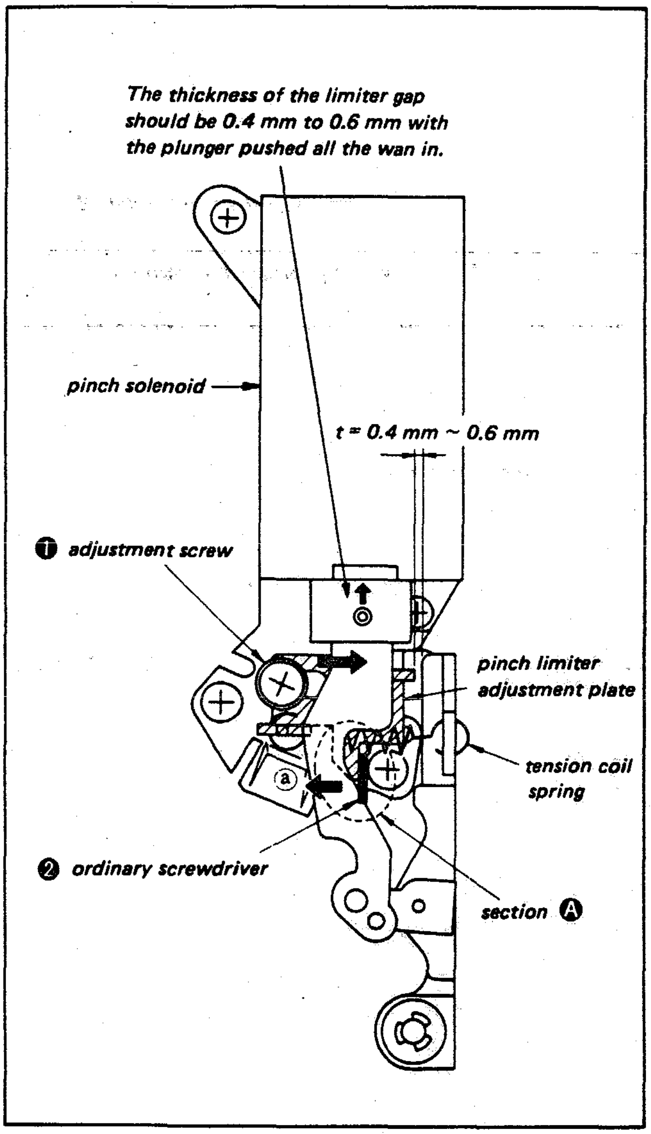
3-10. PINCH SNAP-FIT LIMITER GAP CHECK AND ADJUSTMENT

[Method of checking]

1) Set in the threading completed condition.
2) With the plunger pushed in all the way, confirm that the thickness of the pinch snap-fit limiter gap is 0.4 mm to 0.6 mm. If it is not, adjust as explained under [method of adjustment] below.

[Method of adjustment]

1) With the pinch solenoid in the absorbed condition (when the plunger is pushed in all the way), loosen the adjustment screw.
2) Press the pinch limiter adjustment plate in the direction of arrow ⓐ with an ordinary screwdriver, as in section Ⓐ in the diagram, and adjust until the thickness of the gap in 0.4 mm to 0.6 mm.
   Tighten the adjustment screw and then lock it to fix everything in place.



The thickness of the limiter gap should be 0.4 mm to 0.6 mm with the plunger pushed all the wan in.

pinch solenoid
t = 0.4 mm ~ 0.6 mm
❶ adjustment screw
pinch limiter adjustment plate
tension coil spring
ⓐ
❷ ordinary screwdriver
section Ⓐ

Fig. 3-22. Pinch snap-fit limiter gap adjustment plate

3-11. THREADING END SWITCH AND T COIL SENSOR

3-11-1. Threading End Switch (TE Switch) Position Check and Adjustment

[Method of checking]

Turn the S threading ring manually. Check to make sure that, when the lock roller moves from above the straight line part of the notch in the ring (Fig. 3-23 section Ⓐ) to 1/3 of the way down it and back, the TE switch turns ON and OFF.

If the lock roller has to move outside of this range before the switch will turn ON and OFF, adjust as explained below.

[Method of adjustment]

1) Set the lock roller between the top of the notch in the S threading ring and 1/3 of the way down it, turn the TE switch in the direction of the arrow and, when the switch turns ON, fix the TE switch in place.
2) When the adjustment is completed, repeat the check as described above [method of checking].

[Removal]

1) Remove the tension coil spring that is attached to the S coil sensor assembly, then remove the S coil sensor.
2) Remove the lock arm assembly in te direction of arrow Ⓐ

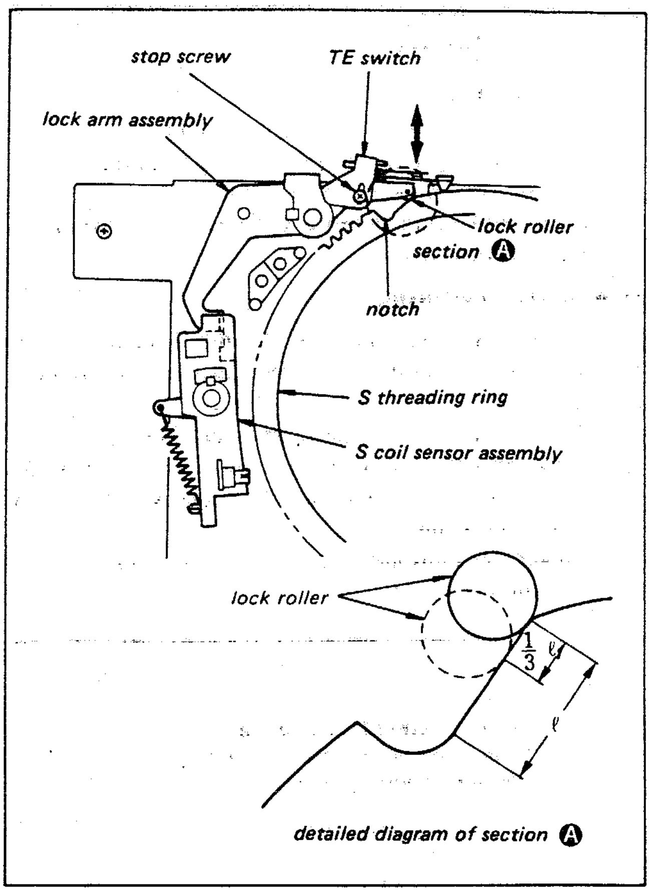

stop screw
TE switch
lock arm assembly
lock roller
section Ⓐ
notch
S threading ring
S coil sensor assembly
lock roller
1/3 ℓ
ℓ
detailed diagram of section Ⓐ

Fig. 3-23. TE switch position adjustment

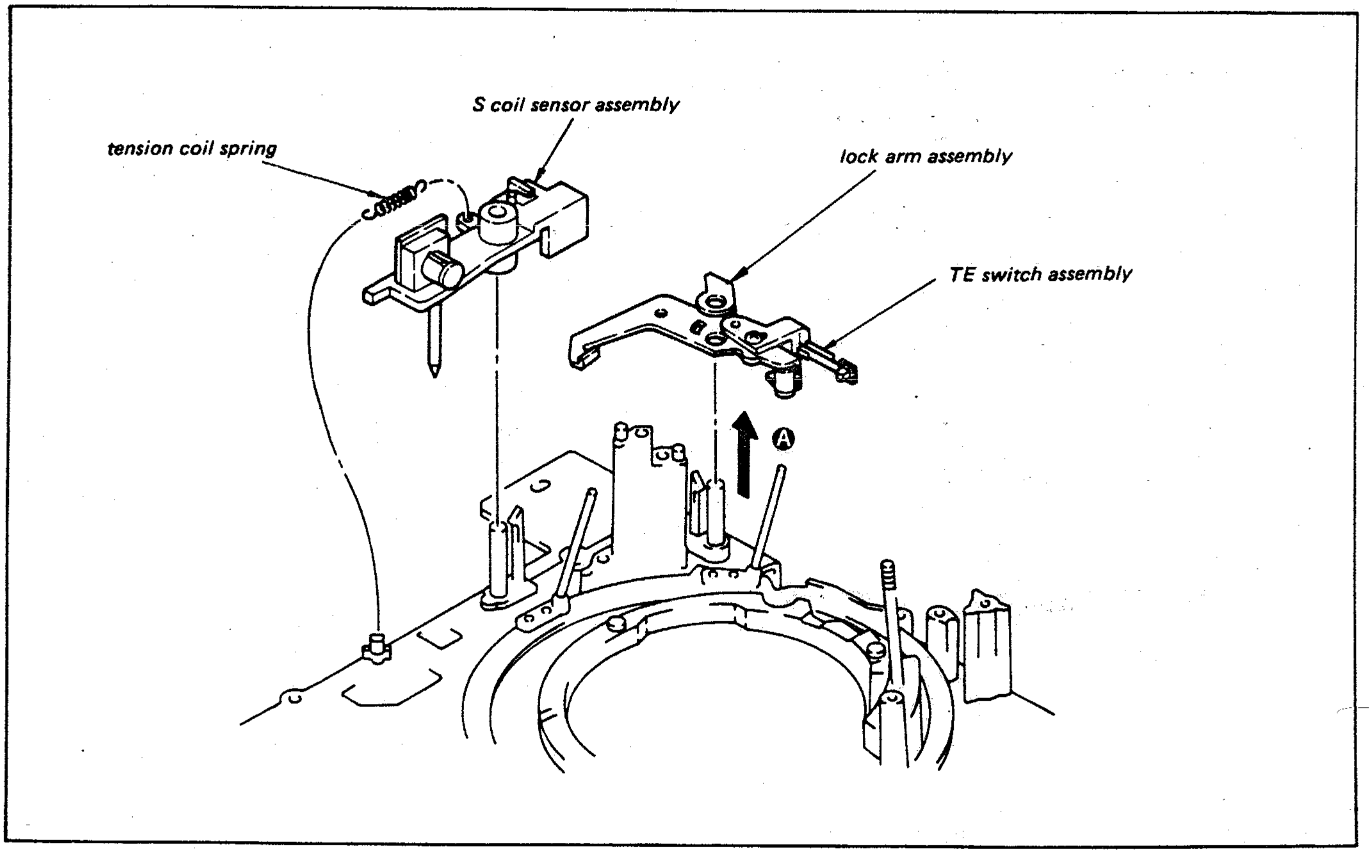

S coil sensor assembly
tension coil spring
lock arm assembly
TE switch assembly
Ⓐ

Fig. 3-24. Removal of the TE switch assembly and lock arm assembly

1-7. HOW TO LOAD, THREAD, UNLOAD AND UNTHREAD WITH THE POWER OFF

1-7-1. Manual Loading and Unloading

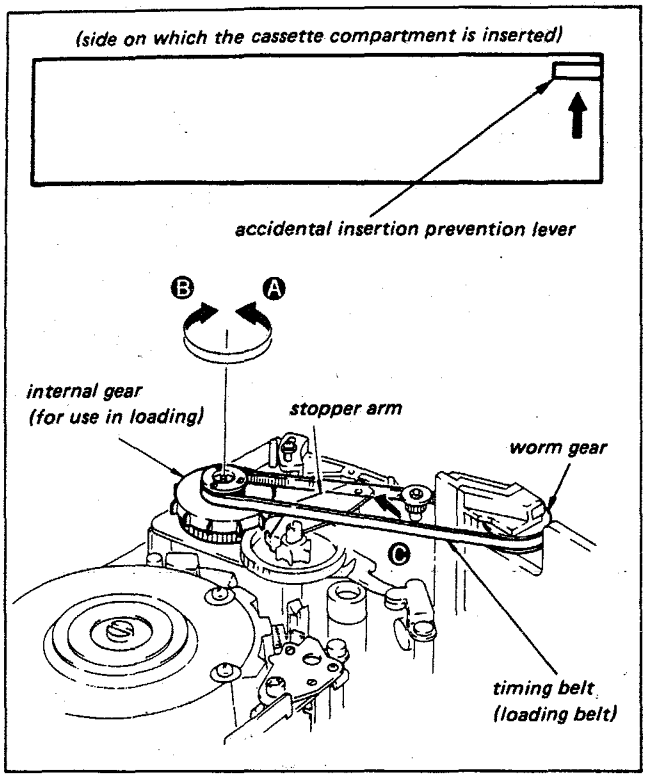

(side on which the cassette compartment is inserted)
accidental insertion prevention lever
Ⓑ
Ⓐ
internal gear (for use in loading)
stopper arm
worm gear
Ⓒ
timing belt (loading belt)

Fig. 1-8. Manual loading and unloading

1) Release the right accidental insertion prevention lever inside the cassette compartment, then press the stopper arm in the direction of arrow Ⓒ and release the internal gear stop.
2) Turn the internal gear manually in the direction of arrow Ⓐ until loading is completed.
3) To unload, turn the internal gear in the direction of arrow Ⓑ.

Note:
When the loading belt has been removed, load and unload by turning the worm gear manually.

1-7-2. Manual Threading and Unthreading

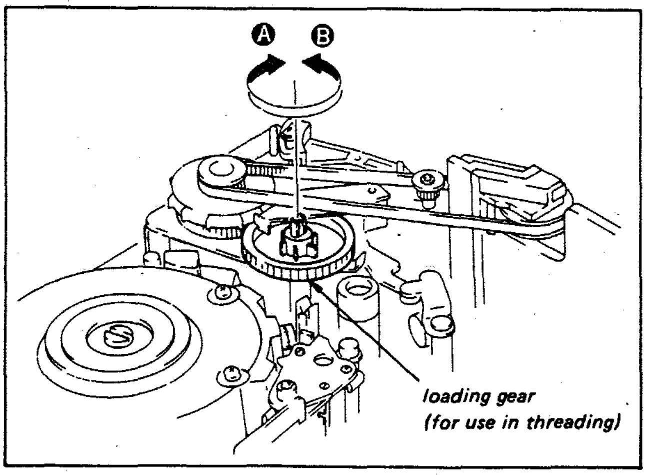

Ⓐ
Ⓑ
loading gear (for use in threading)

Fig. 1-9. Manual threading and unthreading

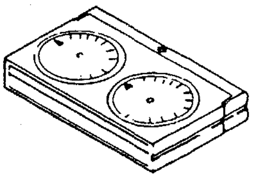
1) Turn the loading gear in the direction of arrow Ⓐ until loading is completed.
2) To unthread, turn the loading gear in the direction of arrow Ⓑ.

Note:
Always turn the loading gear sideways by hand. Never use a screwdriver or other tool.

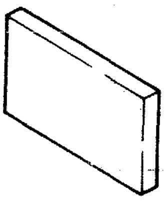
1-8. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref.No.	Name	Part Code	Carved Jig No.	Use and Remarks
J-1	Torque Measurement Tape	J-6080-003-C	SL-0003C	forward torque and back tension measurement
J-2	Parallel Plate	J-6086-570-A	SL-0657	audio/CTL head lateral adjustment capstan shaft vertical adjustment
J-3	Dental Mirror (handle) Dental Mirror (mirror)	J-6080-029-A J 6080 030 1	SL-5052	tape path and tape traveling adjustment check
J-4	Alignment Tape (KR5-2H)	8-969-995-52	——	tracking, overall adjustment of picture quality, etc.
J-5	Cleaning Fluid	Y-2031-001-0	——	
J-6	Thickness Gauge	9-911-053-00		
J-7	Chamois Cloth	2-034-697-00	——	cleaning
J-8	Head Demagnetizer	widely available	——	demagnetization of video head and audio head
J-9	Cleaning Cassette Tape	8-888-004-00	——	video head cleaning
J-10	Dihedral Adjustment Screw	J-6080-013-A	SL-0013	video dihedral adjustment

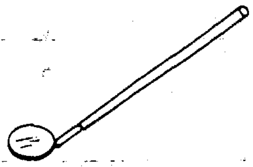
J-1



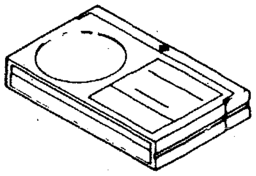
J-2



J-3

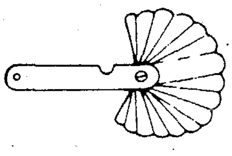


J-4

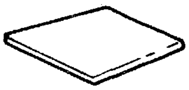


J-5

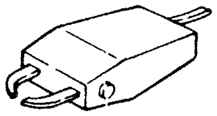
J-6



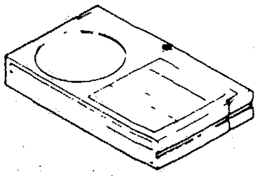
J-7



J-8



J-9



J-10

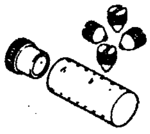


Fig. 1-10. Tools and fixtures required for servicing

2. PERIODIC CHECK AND MAINTENANCE

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

2-1. POST-REPAIR MAINTENANCE

The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1-1. Cleaning of Rotating Head Disk Assembly

1) Press a chamois cloth (Jig Ref. No. J-7) which has been dipped in cleaning fluid (Jig Ref. No. J-5) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a right angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-1-2. Cleaning of the Tape Movement System

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in in cleaning fluid.

2-1-3. Cleaning the Drive System

1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

parts requiring cleaning

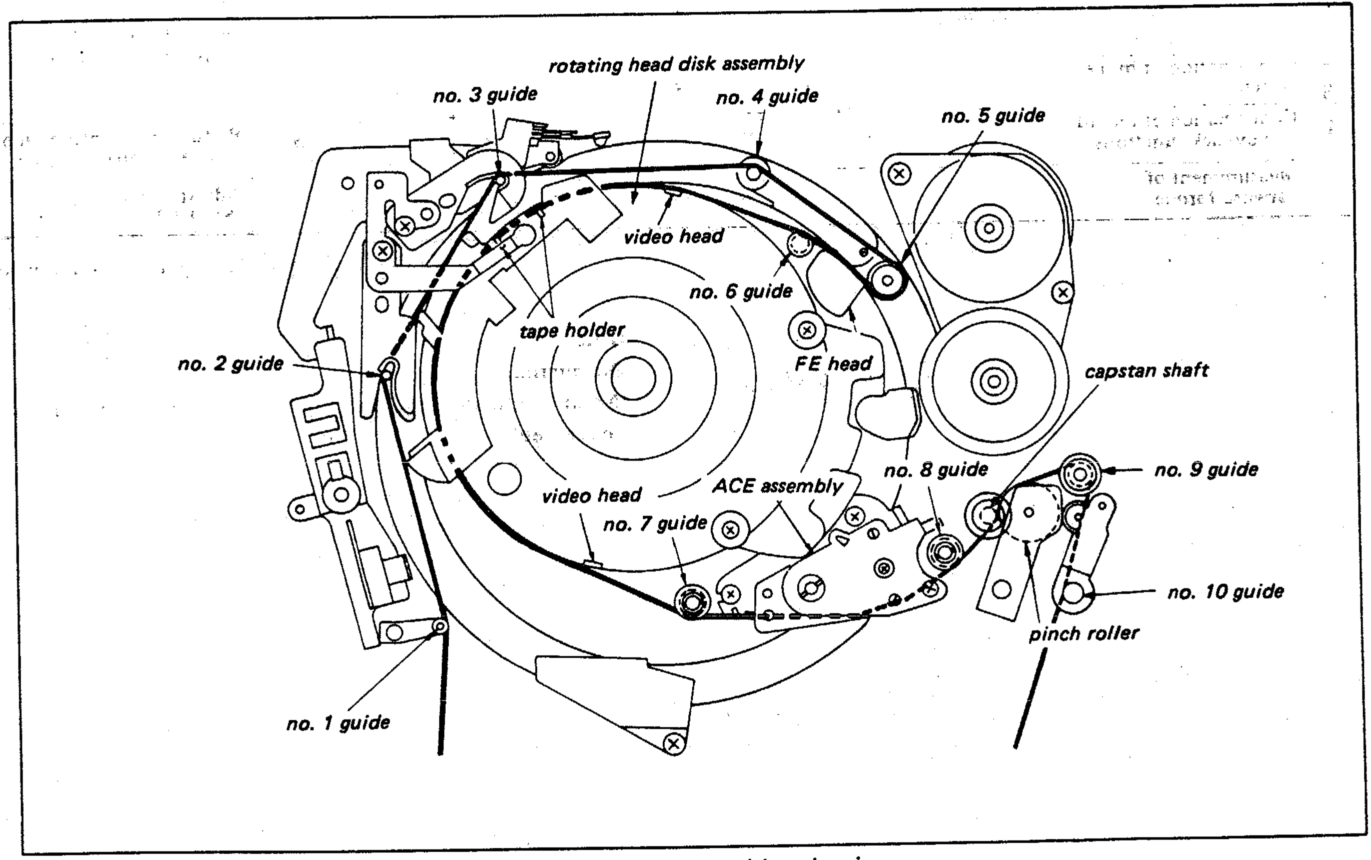

rotating head disk assembly
no. 3 guide
no. 4 guide
no. 5 guide
video head
no. 6 guide
tape holder
no. 2 guide
FE head
capstan shaft
no. 8 guide
no. 9 guide
video head
ACE assembly
no. 7 guide
no. 10 guide
pinch roller
no. 1 guide

Fig. 2-1. Parts requiring cleaning

2-2. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below. accoring to user's operating hours.

	Maintenance & Check \ Operating Hours (H)	Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Trans-Portation System	Cleaning of tape trans-portation system	——	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE ass'y	——	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y	——	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Loading belt (synchro belt)	3-684-264-01	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	This cleaning must be done whenever a repair is made.
	Cleaning of iron core and opening of solenoid	——	–	–	–	○	–	–	–	○	–	–	Wipe iron core and opening of solenoid with dry cloth.
Performance Confirmation	Abnormal sound		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to 3-13. Specified value: adjust to 31 – 35 g·cm (When measured with torque cassette tape)
	Confirmation of brake system		–	☆	–	☆	–	☆	–	☆	–	☆	
	Confirmation of record & playback functions		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 80 ± 5 g·cm (SL-0003C)

○ Cleaning ★ Replacement ☆ Confirmation

Note:
On overhaul
When overhauling the unit, replace parts as indicated in the above table.

3. CHECK, ADJUSTMENT AND REPLACEMENT PROCEDURES

3-1. REPLACEMENT OF ROTATING HEAD DISK ASSEMBLY

3-1-1. Removal of the Rotating Head Disk Assembly (Fig. 3-1)

1) Remove the two screws that hold the damper assembly in place, then remove the damper assembly.
2) Use a hexagonal wrench to remove the hexagonal socket bolt that holds the upper drum assembly in place, then remove the upper drum assembly.

   Note:

   Turn the upper drum to remove, being careful not to move the adjusting plate. Movement of the adjusting plate will have a great effect on the tape path, so caution is required.
3) Unsolder the rotating head disk relay plate (4 red and white leads).
4) Remove the two hexagonal socket bolts holding rotating head disk assembly ❺ in place, then remove the rotating head disk assembly.

   Note:

   Be careful not to touch the head tip with the hand or bang anything against it.

3-1-2. Mounting of the Rotating Head Disk Assembly (Fig. 3-1)

1) Insert rotating head disk ❺ in place, being careful of the direction so that the red and white leads are in the right places.
2) Tighten hexagonal socket bolt ❹ and solder the lead wires.

Note:

Be careful to solder the lead wires correctly and not to break any wires.

3) Attach the upper drum, being careful (as during removal) not to move the adjusting plate. While pressing the two points that determine the height, tighten hexagonal socket bolt ❷.

   Note:

   When inserting the upper drum, be careful that it does not touch the head tip.

Note:

When replacing the rotating drum head, it can happen that the rotating head disk assembly will be hard to remove. In such a case, remove it using the method explained below (Fig. 3-2).

1) Remove the hexagonal socket bolts that hold the rotating head disk assembly in place.
2) When the head disk is jammed on tight and is hard to remove, screw the hexagonal socket bolts removed in step ❶ into the threaded holes removed from the original holes by 90°. Tighten them a little at a time.

The head disk will be lifted up by the two screws and will come off easily.

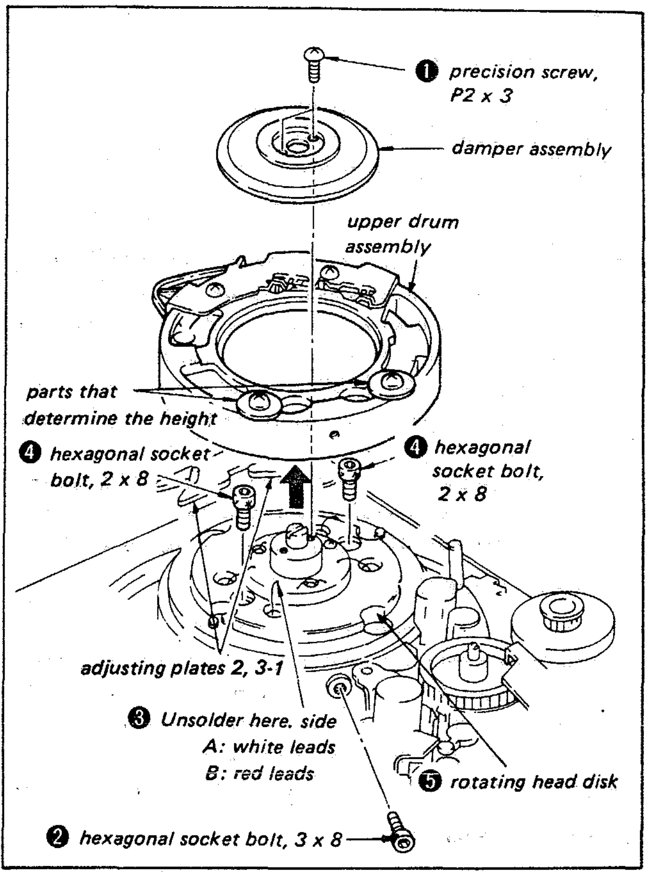

❶ precision screw, P2 x 3
damper assembly
upper drum assembly
parts that determine the height
❹ hexagonal socket bolt, 2 x 8
❹ hexagonal socket bolt, 2 x 8
adjusting plates 2, 3-1
❸ Unsolder here, side A: white leads B: red leads
❺ rotating head disk
❷ hexagonal socket bolt, 3 x 8

Fig. 3-1. Removal of the rotating head disk assembly I

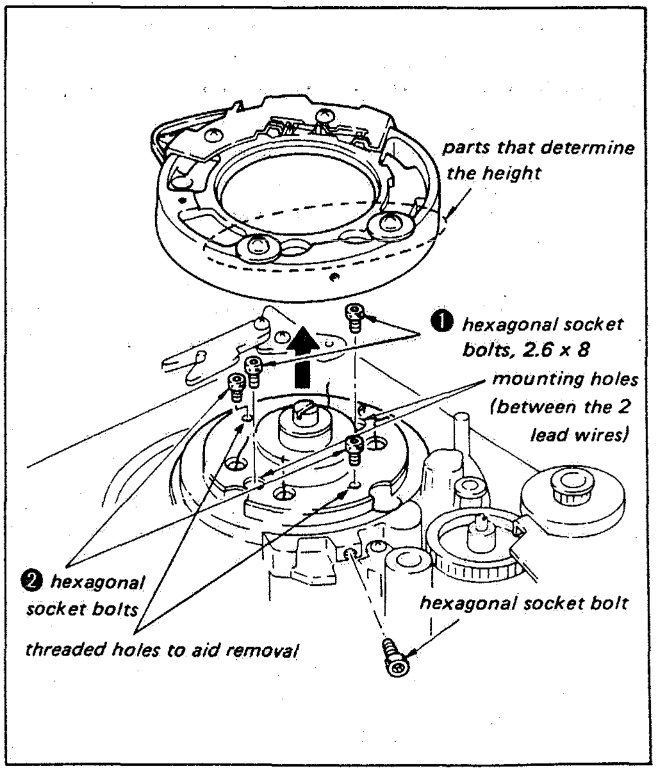

parts that determine the height
❶ hexagonal socket bolts, 2.6 x 8
mounting holes (between the 2 lead wires)
❷ hexagonal socket bolts
hexagonal socket bolt
threaded holes to aid removal

Fig. 3-2. Removal of the rotating head disk assembly II

3-2. VIDEO HEAD DIHEDRAL CHECK AND ADJUSTMENT

This adjustment is generally unnecessary, but it is sometimes necessary when the video head disk is replaced. (The video head disk used for maintenance has been precision adjusted at the factory using a microscope and almost never needs to be readjusted.)

When judging whether the video head dihedral angle is correct, the alignment tape is played back. When this is done the tracking control knob must be in the centering position. If the check is done with this knob in other than the center click position (if the tracking is off-center), even if the dihedral angle is correct the picture will be reproduced as if it were off.

Before this adjustment is performed, the ACE assembly position adjustment (refer to the section where the tape path adjustment is described) must be completed.

[Method of checking]

With the tracking control knob set to the center click position, play back the monoscope section of the alignment tape. Check to see if any of the vertical monoscope lines immediately below the switching pulse are reproduced double. If not, the dihedral angle is correct and does not have to be adjustment. If so, perform the adjustment as explained below.

[Method of adjustment]

1) As shown in Fig. 3-3, screw two dihedral angle adjustment screws (Jig Ref. No. J-10) into the adjustment screw holes on the side on which the red lead wires from the video head are connected, until the top of the screw is level with the video head disk. (If they are not screwed in far enough, the video head disk will not turn past the point where the top of the adjustment screw strikes the upper drum. Conversely, if it is screwed in too far, the head base will be moved, throwing the video head dihedral angle way off.)

   Note:

   The side on which the white lead wires are connected is the reference side and must not be moved.

2) Screw one of the two adjustment screws in a little bit farther until resistance is felt. Beyond this point, turning the screw still farther will move the video head, adjusting the dihedral angle.
3) With the adjustment screws in place, play the monoscope signal section of the alignment tape and see how the lines are reproduced. If the vertical lines are split apart more than before, turn the screw which was screwed in more tightly counterclockwise to loosen it, then adjust by tightening the other screw.
4) After the adjustment is completed, remove the adjustment screws and play the tape again to reconfirm that the adjustment is correct.

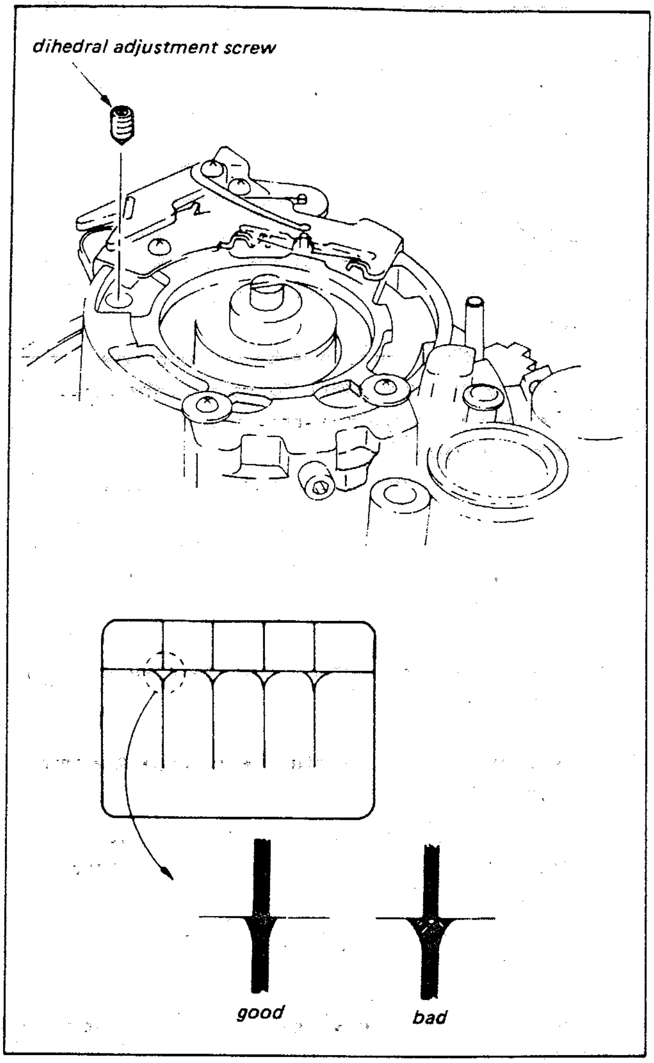


Fig. 3-3. Video head dihedral adjustment

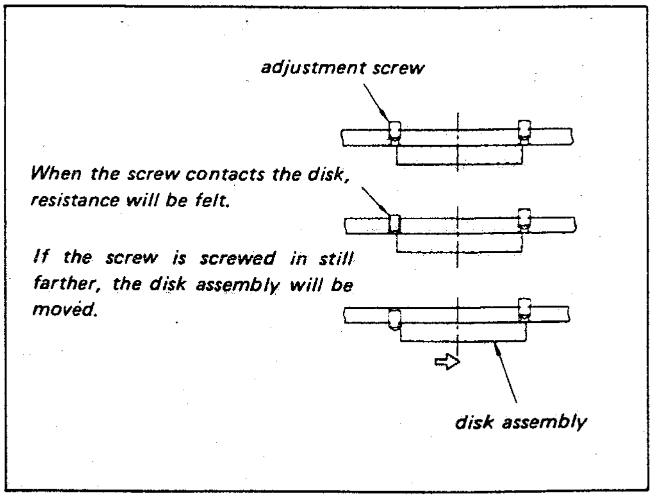

adjustment screw
When the screw contacts the disk, resistance will be felt.
If the screw is screwed in still farther, the disk assembly will be moved.
disk assembly

Fig. 3-4.

3-3. REPLACEMENT AND ADJUSTMENT OF THE DRUM ASSEMBLY

3-3-1. Replacement of the Drum Assembly

1) Measure gap Ⓐ between adjusting plate 2 and the upperdrum holder section and record the measurement.
   Note:
   The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.
2) Measure gap Ⓑ between adjusting plate 3-1 and the upper drum holder section, and record the measurement.
   Note:
   The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.
3) Remove the screws shown in Fig. 3-5, then remove the tape guide ground plate and adjusting plates 2 and 3-1.
4) Remove the 3 connectors from the rear of the chassis as shown in Fig. 3-6.
5) Remove the 3 drum mounting screws from the rear of the chassis, then remove the main body of the drum assembly. After the replacement has been completed, adjust the drum path.

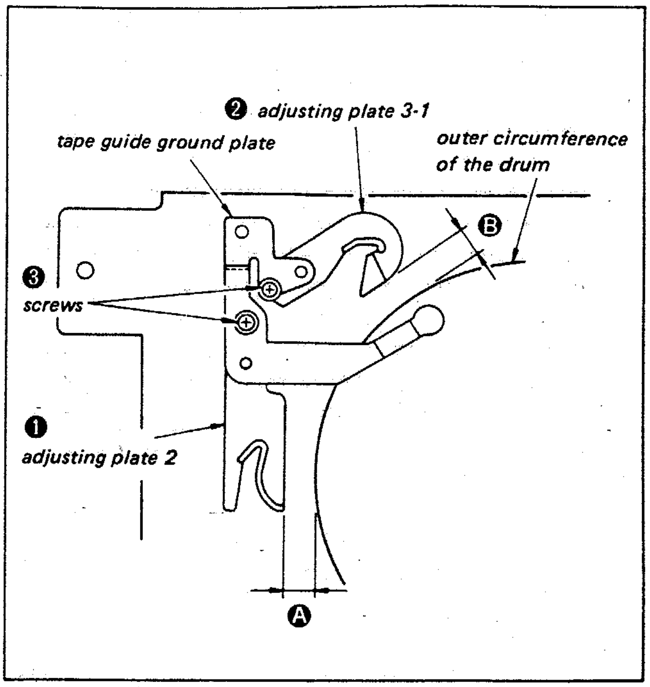

❷ adjusting plate 3-1
tape guide ground plate
outer circumference of the drum
Ⓑ
❸
screws
❶
adjusting plate 2
Ⓐ

Fig. 3-5. Measurement of the position of adjusting plates 2 and 3-1

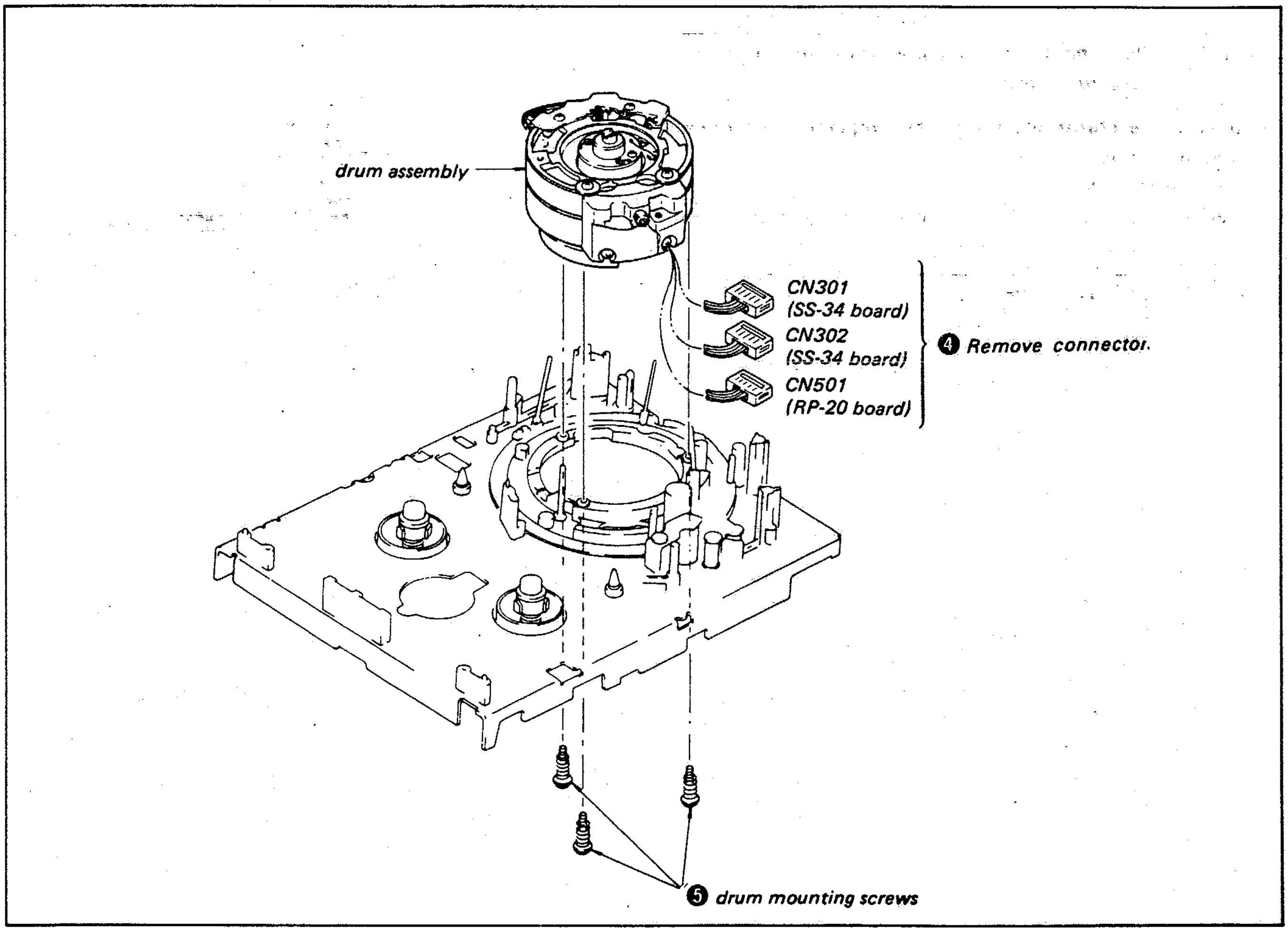

drum assembly
CN301 (SS-34 board)
CN302 (SS-34 board)
CN501 (RP-20 board)
❹ Remove connector.
❺ drum mounting screws

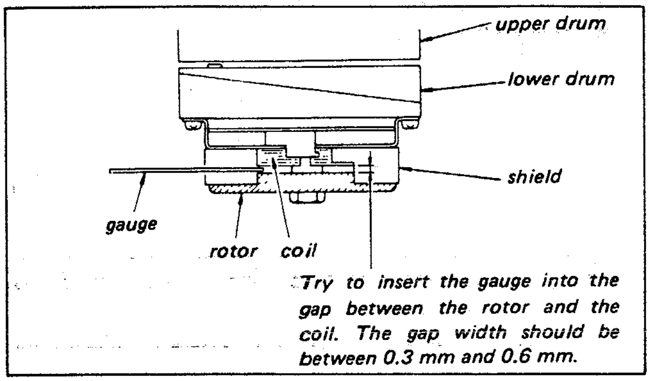
Fig. 3-6. Removal of the drum assembly

3-3-2. Adjustment of the Motor Gap when Replacing the Drum Assembly

After replacing the drum assembly, adjust the gap between the motor rotor and the coil to 0.3 mm to 0.6 mm (Fig. 3-7).

[Procedure]

1) When re-assembling the drum, use the spacers which were removed to produce a gap of between 0.3 mm and 0.6 mm. Measure the gap using the gauge that comes with the drum for assembly and maintenance use. One side of the gauge is 0.3 mm and the other side is 0.6 mm. If the gap is adjusted correctly, the 0.3 mm side should fit in and the 0.6 mm side should not.
2) If this fails to give the correct gap width, do not use the spacers which were removed; instead, use a combination of the 4 0.3 mm accessory spacers to obtain the correct width.

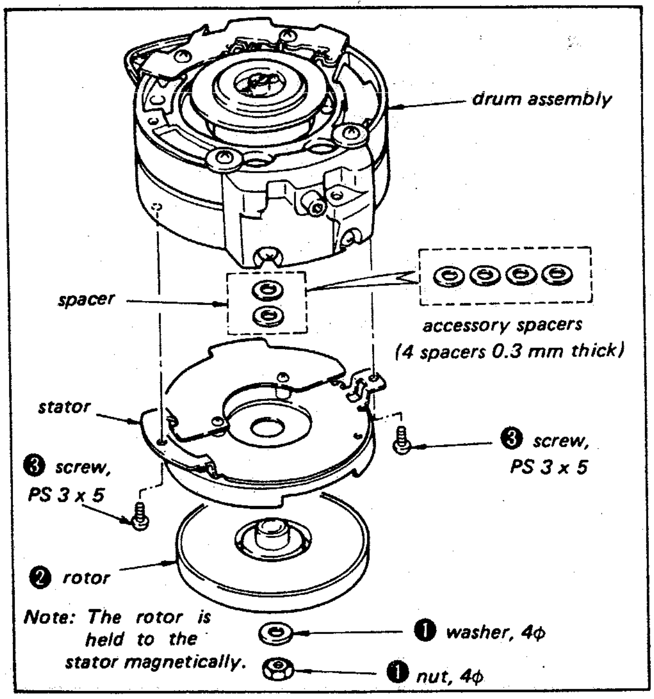

upper drum
lower drum
shield
gauge
rotor
coil

Try to insert the gauge into the gap between the rotor and the coil. The gap width should be between 0.3 mm and 0.6 mm.

Fig. 3-7. Checking the motor gap width after replacing the drum assembly

Removal of the stator and rotor when replacing the drum

1) Remove the nut and washer.
2) Remove the rotor from the stator.
3) Remove the 2 screws, then remove the stator from the main body of the drum.


drum assembly
spacer
accessory spacers
(4 spacers 0.3 mm thick)
stator
❸ screw,
PS 3 x 5
❸ screw,
PS 3 x 5
❷ rotor
❶ washer, 4ϕ
❶ nut, 4ϕ

Note: The rotor is held to the stator magnetically.

Fig. 3-8. Removal of the stator and rotor when replacing the drum

3-4. REPLACEMENT OF THE CAPSTAN MOTOR

3-4-1. Removal of the Capstan Motor (Fig. 3-9)

- Remove the three screws ❶ then remove the capstan motor from the rear of the mechanical chassis.

  Note:

  When the capstan motor has been removed or replaced, check the tape path once.

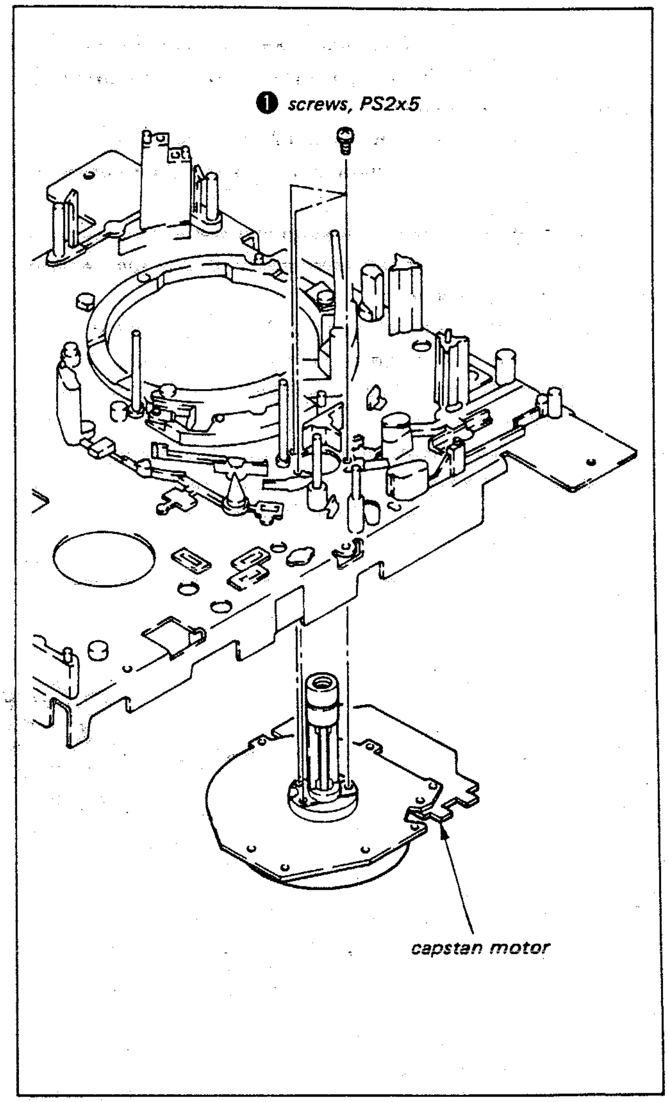

❶ screws, PS2x5
capstan motor

Fig. 3-9 Removal of the capstan motor

3-5. REMOVAL OF THE S COIL SENSOR (Fig. 3-10)

1) Remove the spring.
2) Remove the claw in the direction of arrow Ⓐ, then pull the S coil sensor out.
3) Pull out the connector from CN604 on SS-34 board.

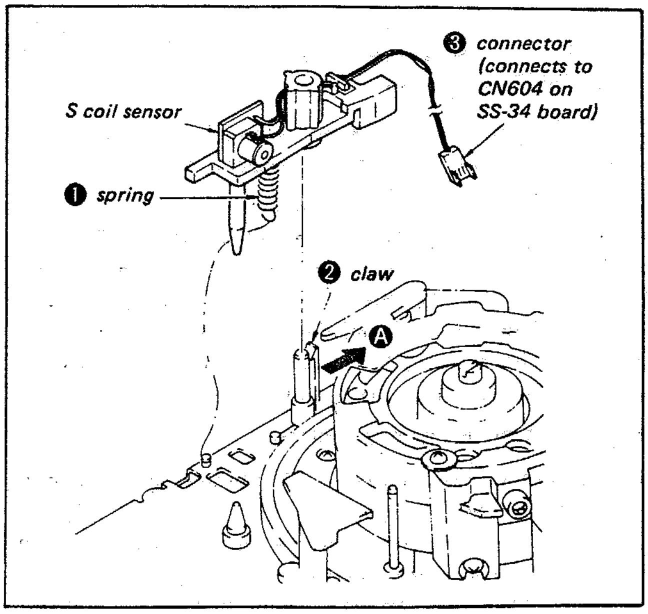

❸ connector (connects to CN604 on SS-34 board)
S coil sensor
❶ spring
❷ claw
Ⓐ

Fig. 3-10. Removal of the S coil sensor

3-6. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 3-11)

1) Remove the four screws (BVTP3 x 8) ❶.
2) Remove the internal gear flange ❷.
3) Remove the timing belt (loading belt) ❸.
4) Pull out the connector CN606 ❹, on the SS-34 board.
5) Remove the FL cassette compartment assembly in the direction shown by the arrow.

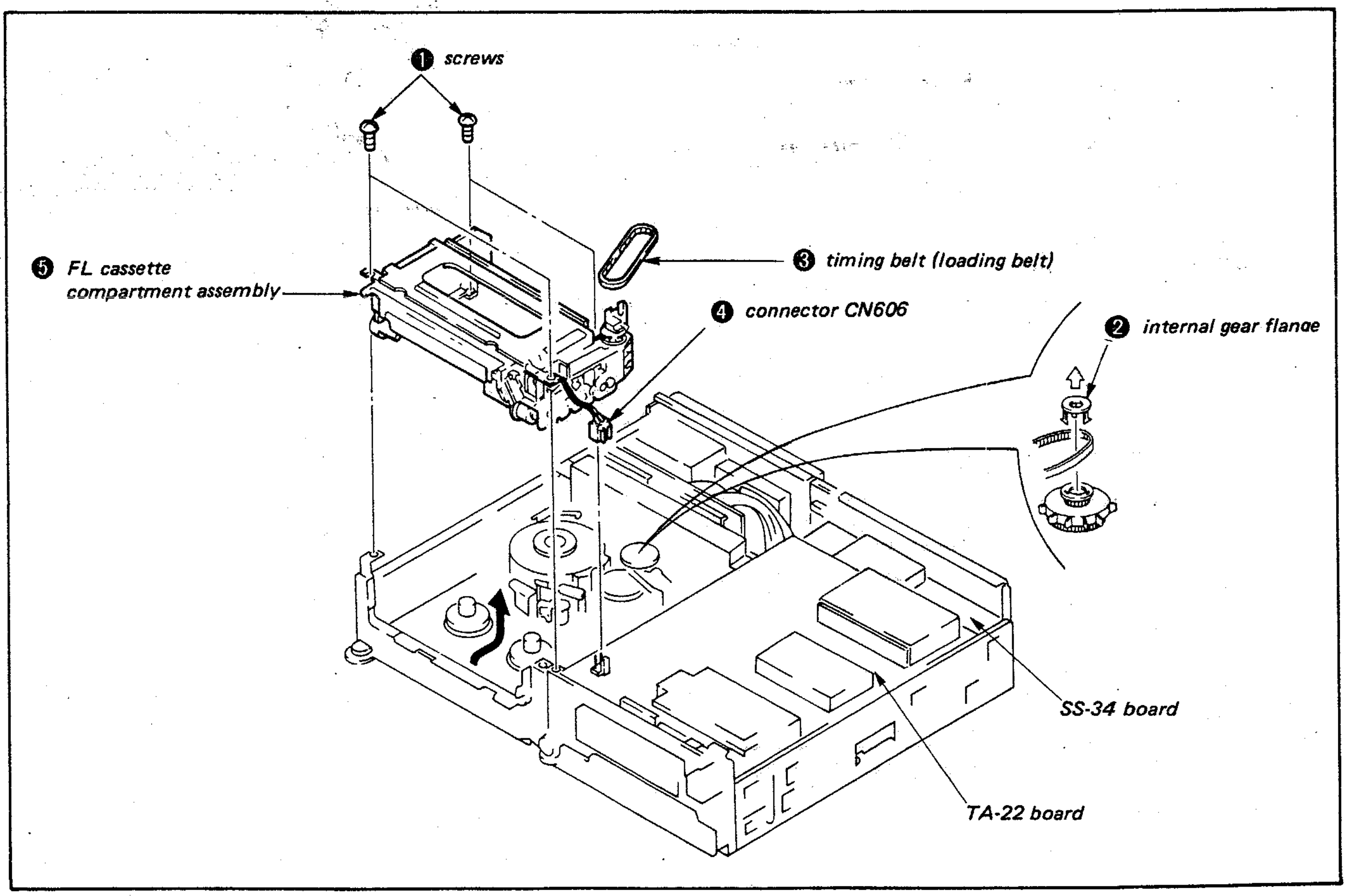

❶ screws
❺ FL cassette compartment assembly
❸ timing belt (loading belt)
❹ connector CN606
❷ internal gear flange
SS-34 board
TA-22 board

Fig. 3-11. Removal of the FL cassette compartment assembly

3-7. ADJUSTMENT OF THE FL CASSETTE COMPARTMENT

3-7-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder must always move parallel to the mechanical chassis. The gear system is used to control the amount by which the cassette holder advances so that this will be the case. Consequently, if the gears in this section slip out of mesh, the next time the unit is assembled the gear mesh must be adjusted to the correct position; otherwise the cassette will not feed properly.

[Adjustment of the gear positions]

1) Get a positioning rod about 200 mm long and 1.5 mm in diameter ready.
2) While passing the positioning rod through the combination of the drive arm right and cassette ON cam, fit the latter on the right side plate. Similarly, fit the drive arm left onto the left side plate.
3) Similarly, while passing the positioning rod through the worm wheel, fit the latter onto the right side plate.
4) Similarly, while passing the positioning rod through the combination of the limiter gear and cassette OFF cam, fit the latter onto the right side plate.

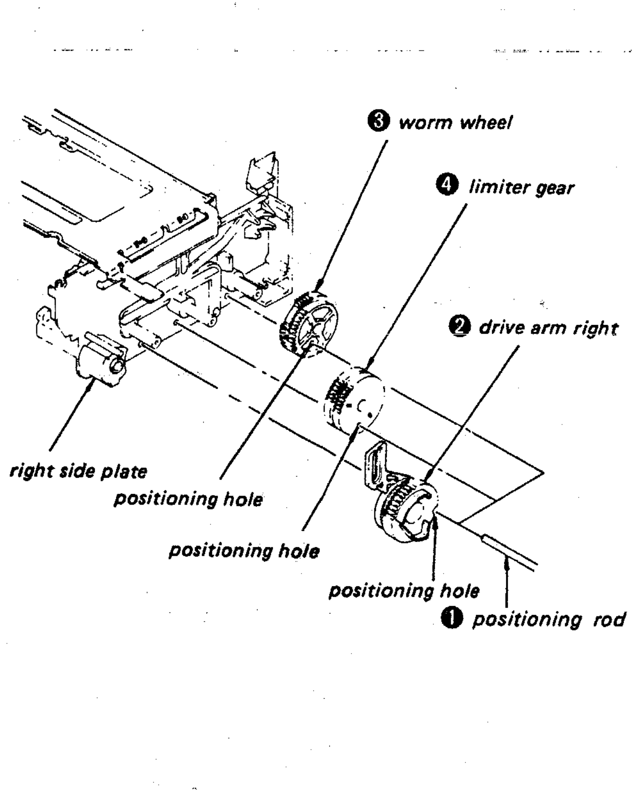

❸ worm wheel
❹ limiter gear
❷ drive arm right
right side plate
positioning hole
positioning hole
positioning hole
❶ positioning rod

Fig. 3-12. Positioning of the FL cassette compartment gears

3-7-2. Cassette ON Switch Operation Check and Adjustment

[Method of checking]

When inserting a cassette into the FL cassette compartment assembly, confirm that, as the cassette is inserted, the leafswitch comes ON when the center of the drive roller is 8 to 13 mm from the end of the guide groove, as shown in Fig. 3-13.

[Method of adjustment]

Bend the tip of the cassette ON switch in the direction of the arrow.

Adjust so that the cassette ON switch comes ON when the above distance is 8 to 13 mm, and finally tighten the screw.

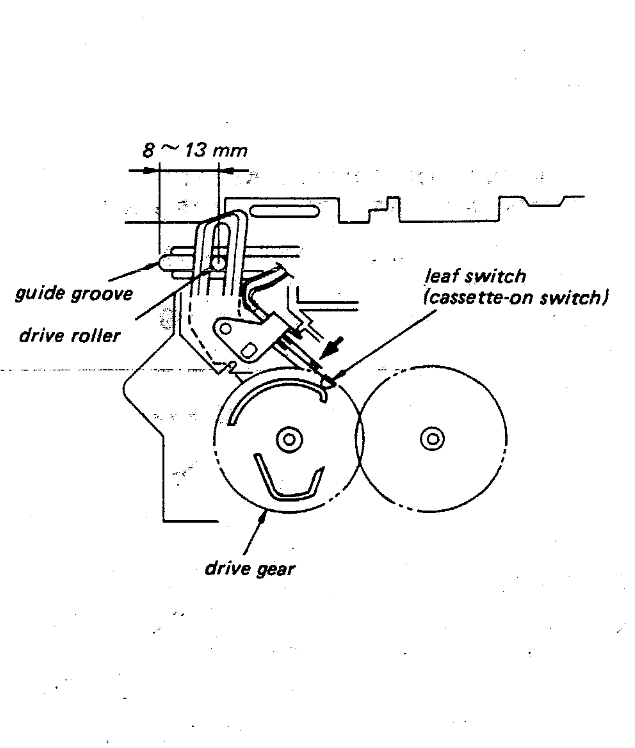
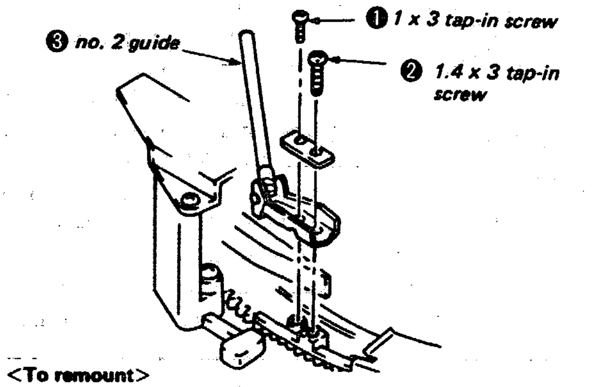

8 ~ 13 mm
guide groove
drive roller
leaf switch
(cassette-on switch)
drive gear

Fig. 3-13. Cassette ON switch operation check and adjustment

3-8. REMOVAL OF THE No. 2 AND No. 3 GUIDES

3-8-1. Removal of the No. 2 Guide

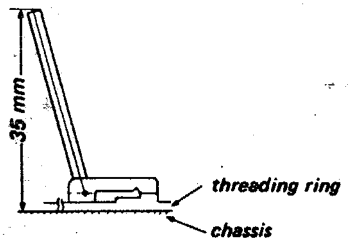
1) Remove the 1×3 tap-in screw.
2) Remove the 1.4×3 tap-in screw.
3) Remove the No. 2 guide assembly.



❸ no. 2 guide
❶ 1 x 3 tap-in screw
❷ 1.4 x 3 tap-in screw

<To remount>

1) Loosely tighten the 1 x 3 tap-in screw.
2) Tighten the 1.4 x 3 tap-in screw all the way.
3) Adjust the 1 x 3 tap-in screw until the height is 35 mm. After adjustment, lock the screw.
Note: The no. 2 guide is up all the way.

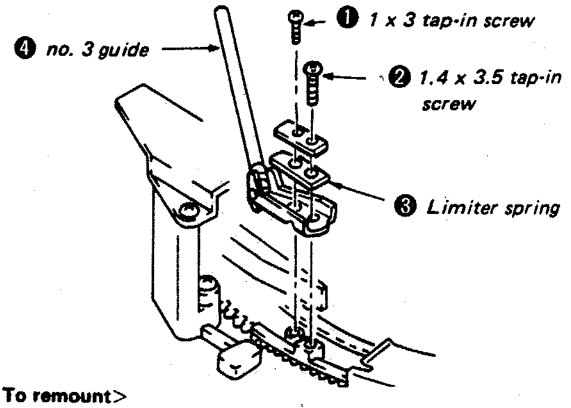


35 mm
threading ring
chassis

Fig. 3-16. Removal of the no. 2 guide

3-8-2. Removal of the No. 3 Guide

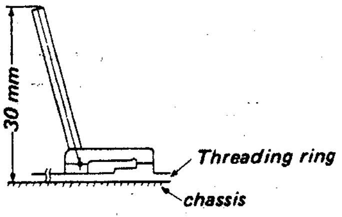
1) Remove the 1×3 tap-in screw.
2) Remove the 1.4×3.5 tap-in screw.
3) Remove the limiter spring.
4) Remove the No. 3 guide assembly.



❹ no. 3 guide
❶ 1 x 3 tap-in screw
❷ 1.4 x 3.5 tap-in screw
❸ Limiter spring

<To remount>

1) Loosely tighten the 1 x 3 tap-in screw.
2) Tighten the 1.4 x 3.5 tap-in screw all the way.
3) Adjust the 1 x 3 tap-in screw so that the height is 30 mm. After adjustment, lock the screw.
Note: The no. 3 guide is up all the way.



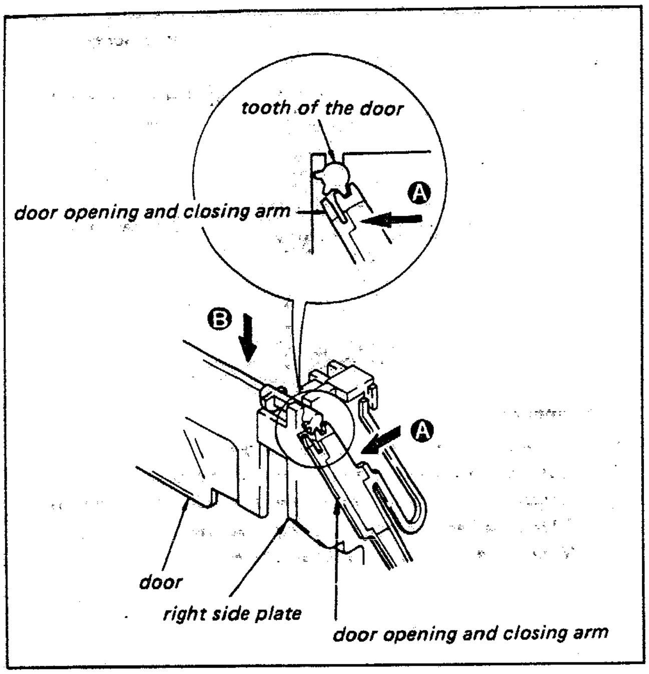
30 mm
Threading ring
chassis

Fig. 3-17. Removal of the no. 3 guide

3-7-3. Checking and Adjustment of the Cassette Door Assembly

[Method of checking]

With the door opening and closing arm returned all the way in the direction of arrow Ⓐ , check to make sure that the door is vertical.



tooth of the door
door opening and closing arm
Ⓐ
Ⓑ
Ⓐ
door
right side plate
door opening and closing arm

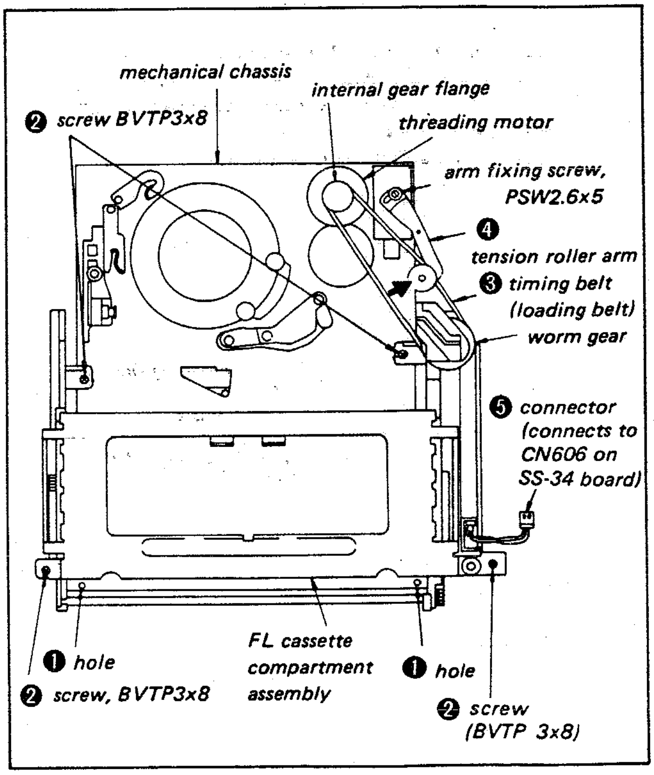
Fig. 3-14. Adjustment of the position of the cassette door assembly

[Method of adjustment]

check to make sure that the door opening and closing rack plate has returned all the way. Then, close the door together in the drection of arrow Ⓑ so that it is vertical. and mesh the gears.

3-7-4. Mounting the FL Cassette Compartment Assembly (Fig. 3-15)

1) Hook the two holes of the FL cassette compartment assembly onto the mechanical chassis. then place the compartment in the specified position on the chassis.
2) Loosely tighten the 4 mounting screws of the FL cassette compartment assembly. Move the FL cassette compartment assembly forward and backward with respect to the mechanical chassis. set it in the correct position. then tighten the mounting screws all the way.
3) Connect the timing belt. (loading belt) between the threading motor and the worm gear. then hold it in place with the internal gear flange.
4) Press the tension roller arm in the direction of the arrow to adjust the tension of the timing belt (loading belt). then fix it in place with the arm fixing screw.
5) Insert the harness sticking out from the FL cassette compartment into connector CN606 on SS-34 board.



mechanical chassis
internal gear flange
❷ screw BVTP3x8
threading motor
arm fixing screw, PSW2.6x5
❹
tension roller arm
❸ timing belt (loading belt)
worm gear
❺ connector (connects to CN606 on SS-34 board)
❶ hole
❷ screw, BVTP3x8
FL cassette compartment assembly
❶ hole
❷ screw (BVTP 3x8)

Fig. 3-15. Mounting the FL cassette compartment assembly

3-13. ADJUSTMENT OF THE FORWARD BACK TENSION

[Method of measurement]

1) Insert the torque cassette (SL-0003C) and put the unit in playback mode.
2) Read the value on the meter on the S reel side after the needle has gone around about once.

   The correct value is 31 g·cm – 35 g·cm

Notes:

i) **The set must be perfectly level during this measurement.**
ii) **After the measurement, the tape can become slack when the stop button is pressed. If this happens set the unit is forward mode to take up the slack before removing the tape.**

[Method of adjustment]

Move the position of the tension coil spring that is hooked on the tension regulating lever assembly in the direction of arrow Ⓐ until the measured value falls within the correct range.

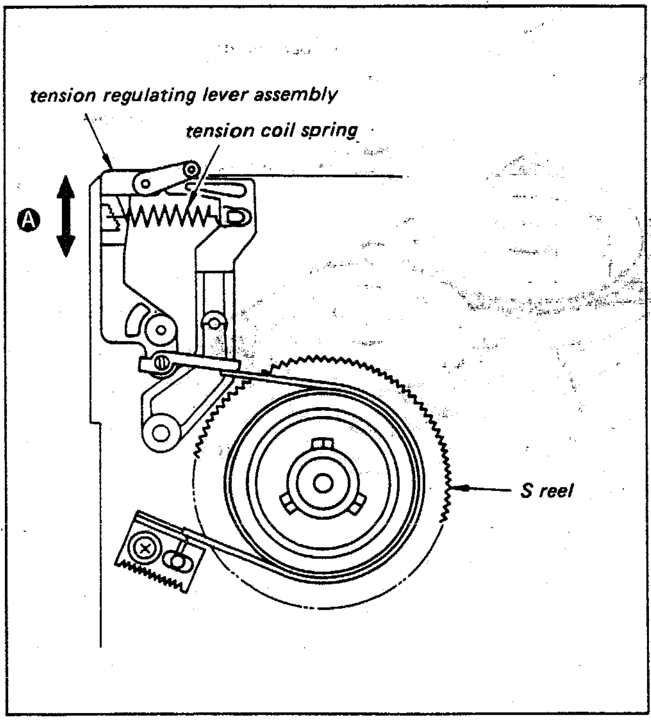


Fig. 3-29 Adjustment of the back tension

3-14. ADJUSTMENT OF THE FORWARD TORQUE

[Method of measurement]

1) Insert the torque cassette (SL-0003C) and start to record a telecast.
2) Read the value on the meter on the T reel side after the needle has gone around about once. The correct range is 80g·cm ± 5g·cm.

[Method of adjustment]

1) Remove the front panel.
2) Turn potentiometer RV308 on SS-34 board to adjust the torque until its value falls within the correct range.

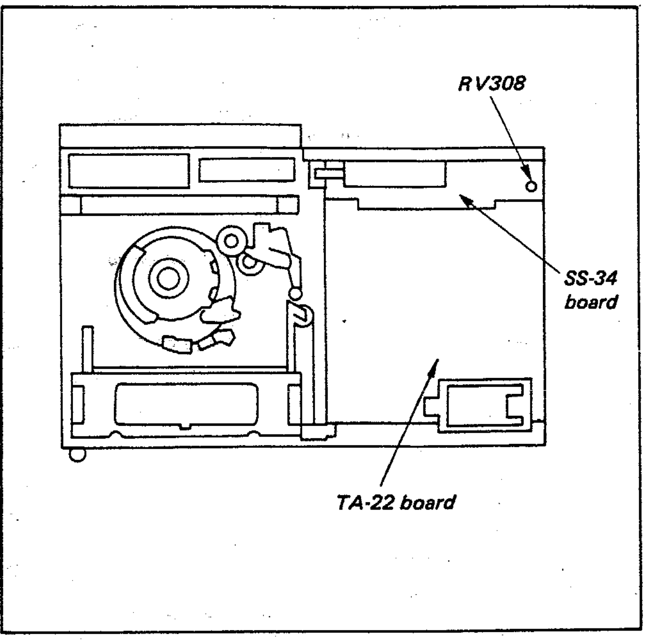


Fig. 3-30. Adjustment of the forward torque

Note:

When the forward torque is weakened during the measurement the tape can become slack, in which case the set will go into emergency stop mode. In such a case, the only switches that will work are the cassette eject switch and the power switch. It is necessary to temporarily remove the cassette, or to turn the power OFF and back ON.

4. TAPE PATH ADJUSTMENT

4-1. TRACKING ADJUSTMENT

This adjustment has a large effect on the picture quality in each mode and on the interchangeability of tapes, so it should be done carefully.

4-1-1. Preparation for adjustment
4-1-2. Adjustment on the entrance side
4-1-3. Adjustment on the exit side

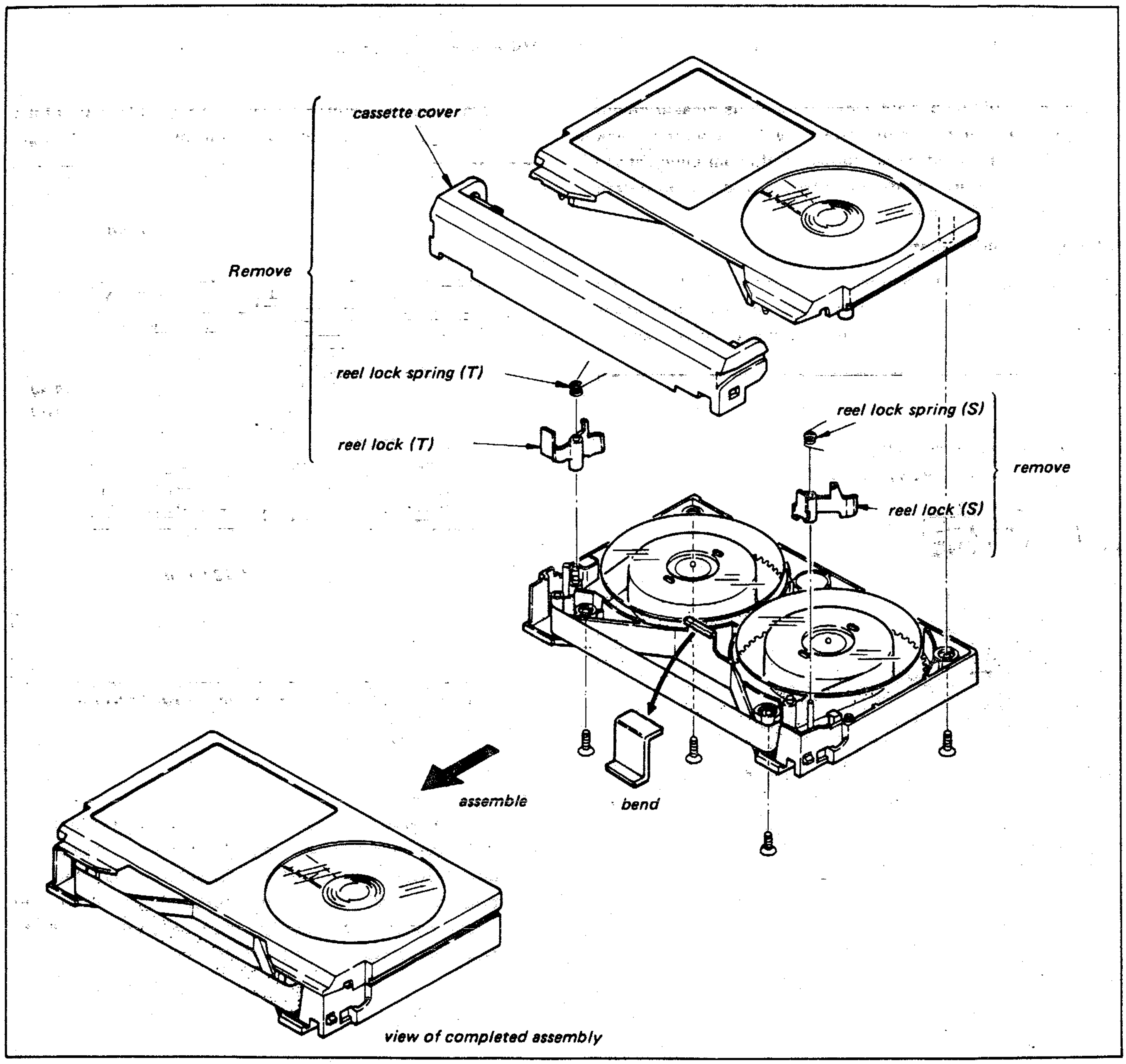
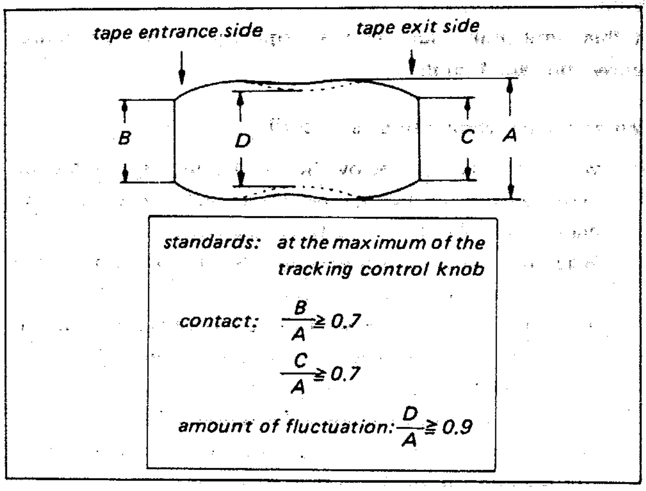

cassette cover
Remove
reel lock spring (T)
reel lock (T)
reel lock spring (S)
remove
reel lock (S)
assemble
bend
view of completed assembly

Fig. 4-1.

4-1-1. Preparation for Adjustment

1) Remove the cassette cover of the alignment tape in accordance with Fig. 4-1.
2) Clean the surface contacted by traveling tape (tape guide, **drum tape trailing surface capstan shaft pich roller. ACE** FE head surface) with a chamois cloth dipped in methanol.
3) Connect the oscilloscope as follows:
   Channel 1: Pin ⑥ of CN502 (RP-20 board)
   External trigger: Pin ③ of CN502 (RP-20 board)
4) Play back the 1 kHz signal on the traking section of the alignment tape.
5) Confirm that the oscilloscope radio frequency output waveform is flat and that the amplitude is a maximum. (Turn the tracking knob right and left to increase and decrease the amplitude while the waveform remains flat.) When the amplitude of the waveform is a maximum, confirm that the fluctuations and contact of the radio frequency output waveform meet the standards given in Fig. 4-2. If they do not, go through the procedure given in step 6).
6) If the entrance waveform cannot be made flat, as shown in Fig. 4-3 (a), by turning the tracking knob, go through the "entrance side adjustment" described in 4-1-2; if the exit waveform shown in Fig. 4-3 (b) cannot be made flat, go through the "exit side adjustment" in 4-1-3.



standards: at the maximum of the tracking control knob

contact: $\frac{B}{A} \geqq 0.7$

$\frac{C}{A} \geqq 0.7$

amount of fluctuation: $\frac{D}{A} \geqq 0.9$

Fig. 4-2.

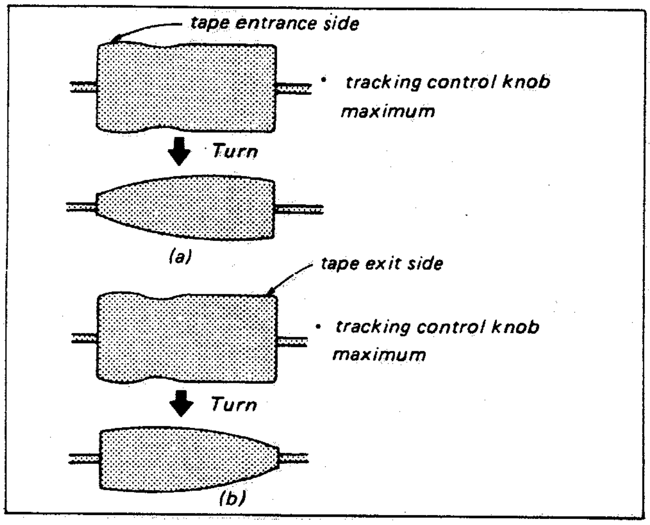

tape entrance side
• tracking control knob maximum
Turn
(a)
tape exit side
• tracking control knob maximum
Turn
(b)

Fig. 4-3.

4-1-2. Entrance Side Adjustment

Whenever the entrance side adjustment is performed, the exit side adjustment must also be performed. The various tape guides and adjustment positions are shown in Fig. 4-5.

1) Turn the No. 6 guide counterclockwise to free the movement of the tape as it enters the drum.
2) Turn the tracking control knob to the right until the amplitude of the waveform is about 60% of its maximum.
3) Loosen No. 5 guide lock screw ❶ and turn the No. 5 guide until the entrance waveform sticks up a little above falt, as shown in the figure below. Then tighten the No. 5 guide lock screw (Fig. 4-6).

   Note:
   After tightening No.5 guide lock screw ❶, confirm that it is as in the figure below.

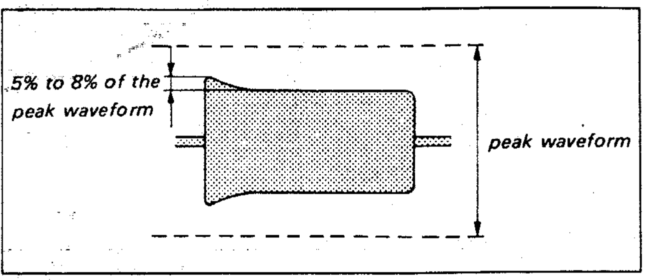


Fig. 4-4.

4) Next, lower the No. 6 guide until the waveform is flat.
5) Press the tape down between the No. 4 and No. 5 guide with a finger to lower the entrance side radio frequency waveform, then let go and confirm that the waveform returns to what it was before.
6) In this condition, check the clearance and curl of the No. 5 guide. If there are clearance and curl, adjust as explained in subsequent sections.

Note:
The tape tension between the No. 3, No. 4 and No. 5 guides must be balanced. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

If the waveform cannot be made to look as shown in Fig. 4-4, or if when the tape is pressed and released on the entrance side it takes time for the waveform to return to what it was before, or if it does not return to what it was before, adjust according to the instructions given below.

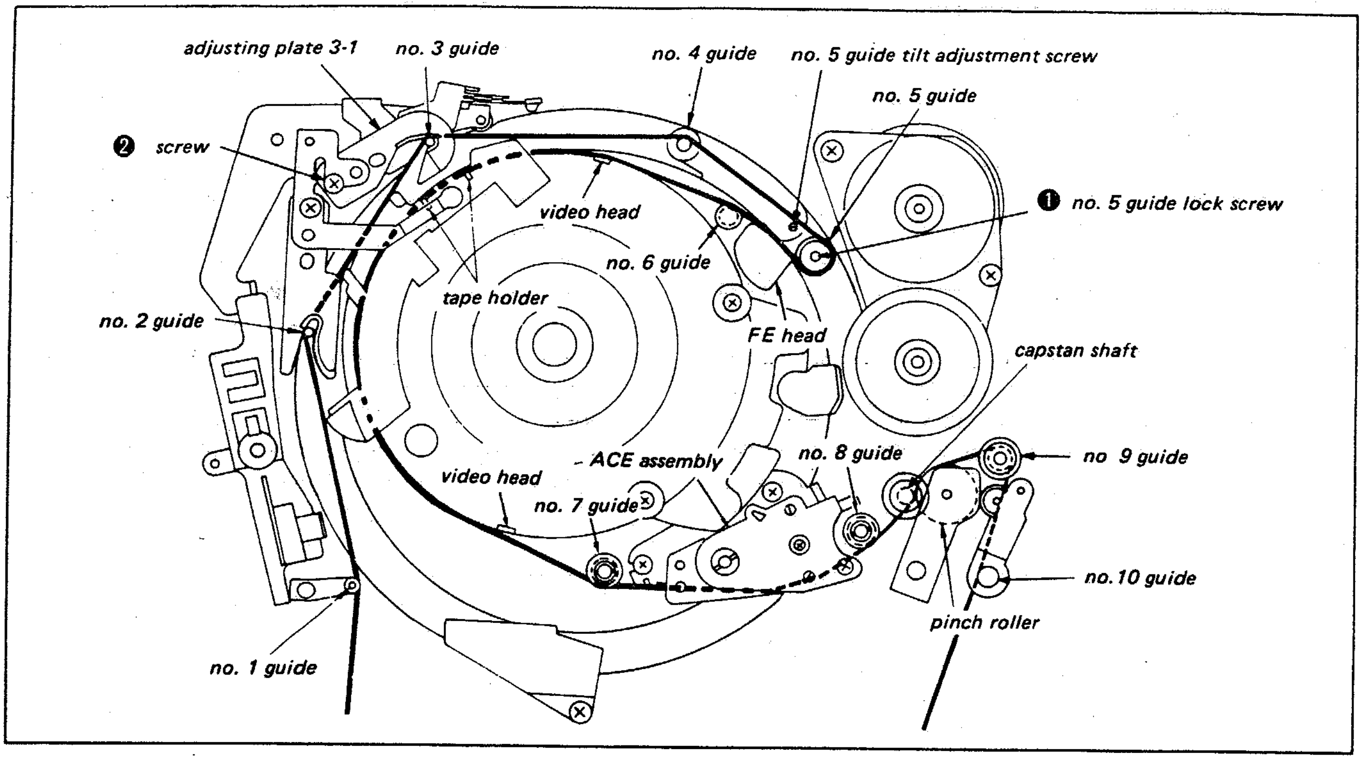

adjusting plate 3-1
no. 3 guide
no. 4 guide
no. 5 guide tilt adjustment screw
no. 5 guide
❷ screw
❶ no. 5 guide lock screw
video head
no. 6 guide
tape holder
no. 2 guide
FE head
capstan shaft
ACE assembly
no. 8 guide
no 9 guide
video head
no. 7 guide
no. 10 guide
pinch roller
no. 1 guide

Fig. 4-5. Tape guide layout diagram

[What to do when the waveform entrance output will not rise]

1) Check to see if the up-down tension between the No. 3, No. 4 and No. 5 guides is uniform. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

   Note:

   The lower flange of the No. 4 guide must not protrude.

2) Raise the lower flange of the No. 4 guide to raise the entrance output.

   Note:

   It is sufficient to raise the lower flange of the No. 4 guide to 0.4 mm from its lowest position (within a rotation angle of 360°).

3) If the operation performed in step 2) fails to raise the waveform output, turn the No. 5 guide tilt adjustment screw slightly to the left, and the entrance output should rise.

[What to do when the waveform entrance output will not drop]

1) Remove the adjusting plate 3-1 of the No. 3 guide from the drum. Just before the lower tension of the tape becomes slack, tighten screw ❷.
2) If the tape is in contact with the lower flange of the No. 4 guide, lower the flange. If the tape is sticking up from the lower flange, adjust the tilt of the No. 5 guide so that the tape does not stick up from the lower flange of the No. 4 guide.

[What to do when there is a clearance in the No. 5 guide]

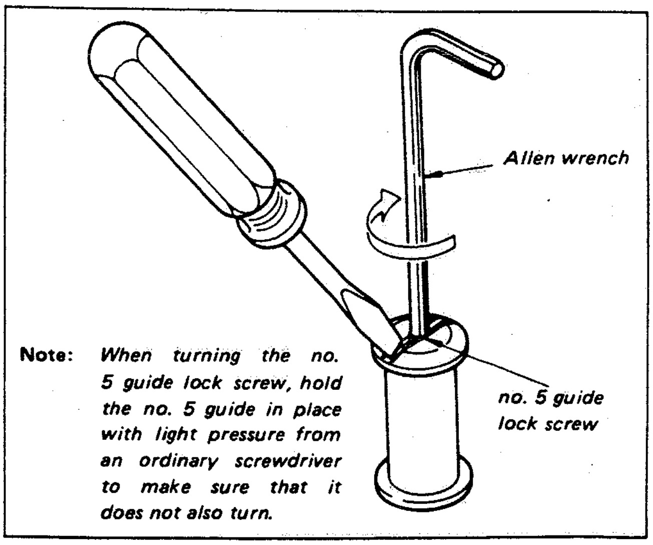
Turn the No. 4 guide counterclockwise to run the tape upward and eliminate the clearance in the No. 5 guide.

Note:

At this time make sure that a large curl is not produced below the No. 4 guide.

[What to do when there is a curl]

1) When there is a gap below the No. 4 guide: Just before the lower tension on the tape becomes slack, move adjusting plate 3-1 of the No. 3 guide to the outside.
2) When there is not a gap below the No. 4 guide (when there is a curl below the No. 4 guide):
   i) Check to see if the No. 4 guide has been raised up too high. If it has been raised up too high, turn the adjusting plate clockwise to lower the No. 4 guide.
   ii) If the curl still has not been removed after i), tighten the No. 5 guide tilt adjustment screw in the clockwise direction until the curl is removed.


Allen wrench
no. 5 guide lock screw

Note: *When turning the no. 5 guide lock screw, hold the no. 5 guide in place with light pressure from an ordinary screwdriver to make sure that it does not also turn.*

Fig. 4-6.

4-1-3. Exit Side Adjustment

1) Connect the oscilloscope to pin ⑥ of CN502 (RP-20 board). Connect the external trigger to pin ③ of CN502.
2) Play the tracking section of the alignment tape. Adjust the tracking knob to reduce the amplitude of the radio frequency output waveform to 60% of its maximum level.
3) Watch the radio frequency output waveform when the No. 7 and No. 8 guides are raised (by turning the respective guide nuts counterclockwise) to let the tape run free. This waveform is called to exit free waveform.

Note:

- **Be careful not to raise the guides too far. They should be raised only about 0.2 to 0.3mm.**

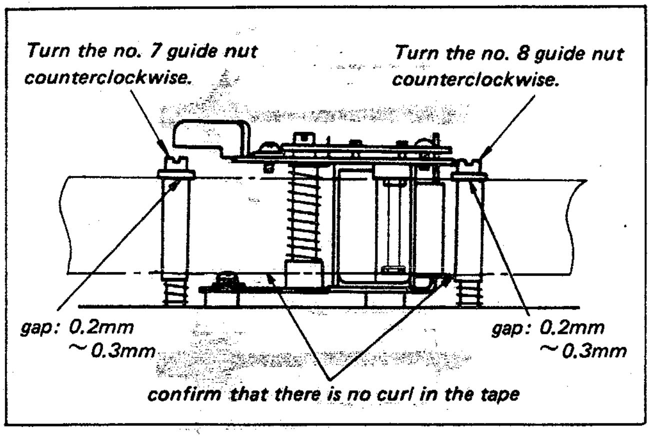

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise.
gap: 0.2mm ~0.3mm
gap: 0.2mm ~0.3mm
confirm that there is no curl in the tape

Fig. 4-7.

4) At this time. confirm that the exit free waveform is within the range shown in Fig. 4-8(a) and (b).
   - If it is outside of this range. adjust according to the procedure in 4-3.

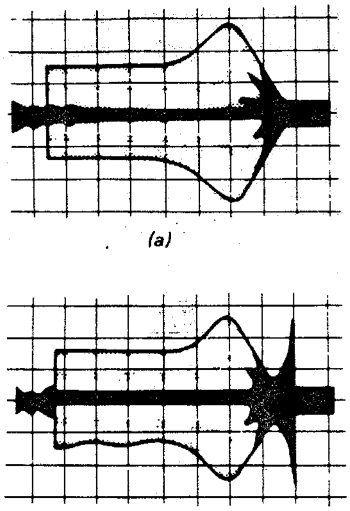


Fig. 4-8.

5) Turn the No. 7 guide nut clockwise until the waveform is flat.
6) Turn the No. 8 guide nut clockwise until the No. 8 guide is lined up with the tape (just before the waveform starts to change lower the guide until there is no curl).
7) During playback. confirm that no curl occurs in the No. 7 guide or the No. 8 guide.
8) During review confirm that no curl or clearance occurs in the No. 8 guide. If there is a curl or clearance. adjust using the No. 9 guide. After adjustment. lock the guide nut.

4-2. ADJUSTMENTS AFTER REPLACEMENT OF THE ACE ASSEMBLY

After removal or replacement of the ACE assembly perform the adjustments listed below.

4-2-1. Exit side tracking adjustment
4-2-2. CTL head (ACE assembly) position adjustment
4-2-3. Audio head (ACE assembly) azimuth adjustment
4-2-4. Audio head (ACE assembly) height adjustment

4-2-1. Exit Side Tracking Adjustment

1) Set the parallel plate (SL-0657 in the list of fixtures and tools) up against the unit as shown in Fig. 4-9. and turn the tilt adjustment screw to adjust the audio head vertically.

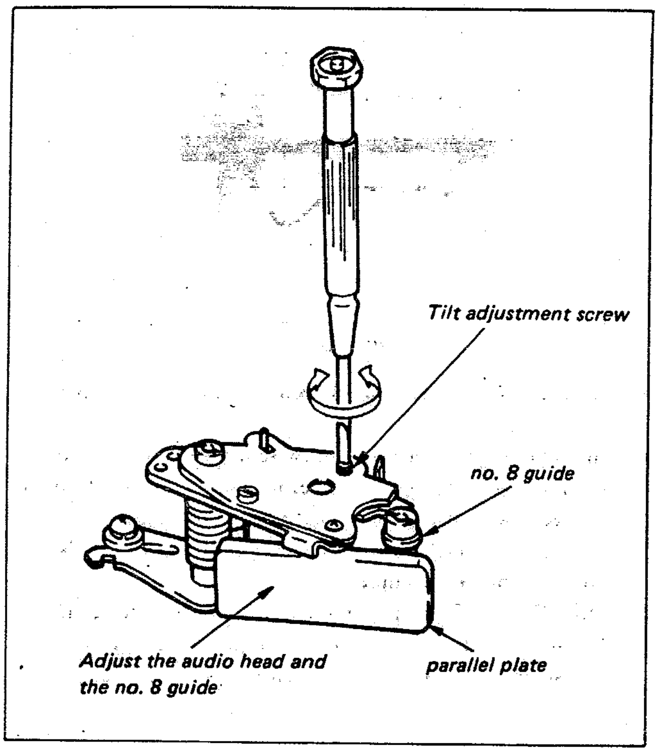

Tilt adjustment screw
no. 8 guide
Adjust the audio head and the no. 8 guide
parallel plate

Fig. 4-9.

2) Connect the oscilloscope to pin ⑥ of connector CN502 (RP-20 board). Connect the external trigger to pin ③ of CN502.
3) Play the tracking section of the alignment tape. Adjust the tracking knob until the radio frequency output waveform amplitude is reduced to about 60% of its maximum level. maximum level.
4) Raise the No. 7 and No. 8 guides (turn the respective guide nuts counterclockwise) and observe the radio frequency exit free waveform when the tape runs free.

Note:

Be careful not to raise the guide too far. Raise it about 0.2 to 0.3 mm.

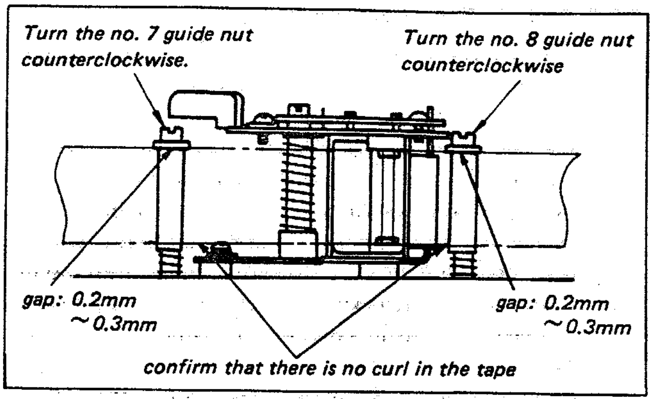
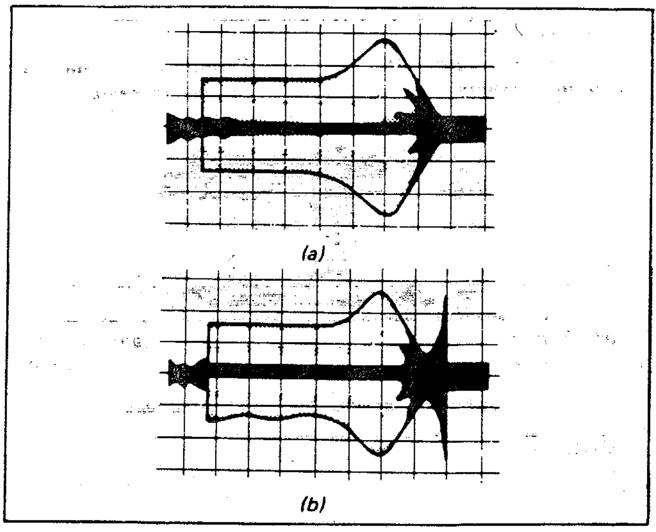

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise
gap: 0.2mm ~0.3mm
gap: 0.2mm ~0.3mm
confirm that there is no curl in the tape

Fig. 4-10.

5) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-11(a) and (b).


(a)

(b)

Fig. 4-11.

[When the waveform is outside this range]

- When the waveform is outside this range and has the form shown in Fig.4-12, turn the tilt adjutment screw clokwise to adjust until the waveform is whthin the required range.

  Note:

  Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

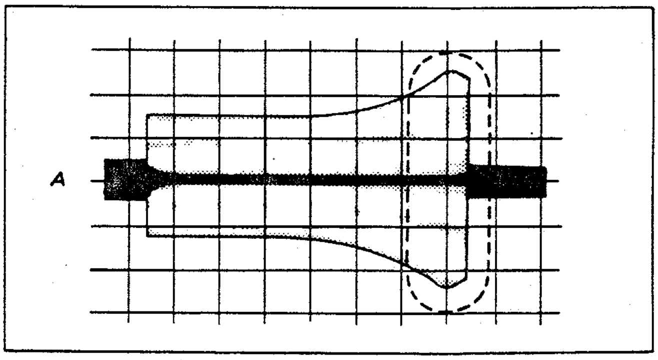


Fig. 4-12.

- When the exit free waveform is outside of the required range and has the form shown in Fig. 4-13, turn the tilt adjustment screw counterclockwise to produce waveform A (Fig. 4-12), then turn it clockwise to bring the waveform within the required range.

Note:
Finish the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

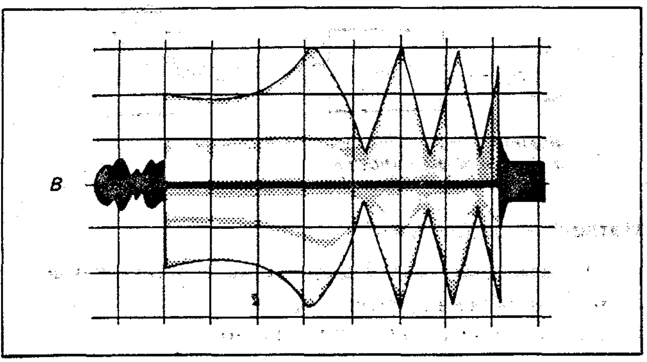


Fig. 4-13.

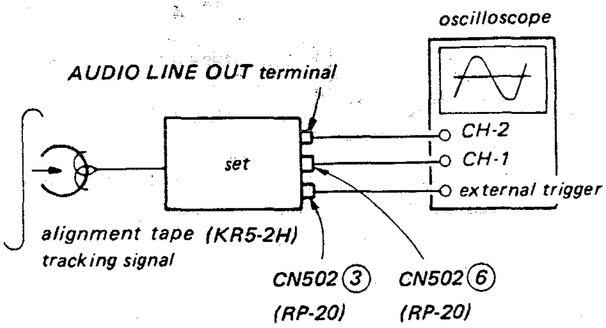
6) Turn the No. 7 guide nut clockwise to flatten the waveform.
7) Turn the No. 8 guide nut clockwise to line the No. 8 guide up with the tape (lower it so that there is no curl just before the waveform starts to change).
8) If the radio frequency waveform is as shown in Fig. 4-12 on the exit side, repeat the adjustment.

4-2-2. CTL Head (ACE Assembly) Position Adjustment

This adjustment includes the mechanical CTL head mounting position adjustment and the electrical tracking control center adjustment. The tracking control center adjustment is to be performed first, followed by the mechanical adjustment of the head mounting position.

[Connections]

1) Playback


oscilloscope
AUDIO LINE OUT terminal
set
CH-2
CH-1
external trigger
alignment tape (KR5-2H)
tracking signal
CN502③
(RP-20)
CN502⑥
(RP-20)

[Method of adjustment]

1) Play the tracking signal section of the alignment tape.
2) Turn the tracking control knob clockwise or counterclockwise to the center click position. Confirm that the amplitude of the radio frequency output signal is at its maximum level. Also confirm that the audio signal 0 level position occurs at the location of the channel B waveform. If the necessary standards are not met follow the procedure in 3).

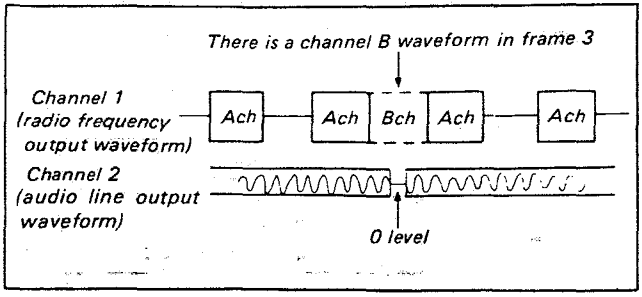

There is a channel B waveform in frame 3
Channel 1
(radio frequency
output waveform)
Ach
Ach
Bch
Ach
Ach
Channel 2
(audio line output
waveform)
0 level

Fig. 4-14.

3) Tracking center adjustment
Refer to electrical adjustment 3) in section 5-3-2.
4) CTL head position adjustment
   a. Set the tracking control knob at the center click position.
   b. **Loosen the 2 ACE assembly position adjustment** screws, then use a tool such as an ordinary screwdriver **to slide the ACE assembly to where the radio** frequency output waveform amplitude becomes a maximum.
   c. Play the color bar signal on the alignment tape and check the picture quality.
   d. Tighten the position adjustment screws, then lock them.

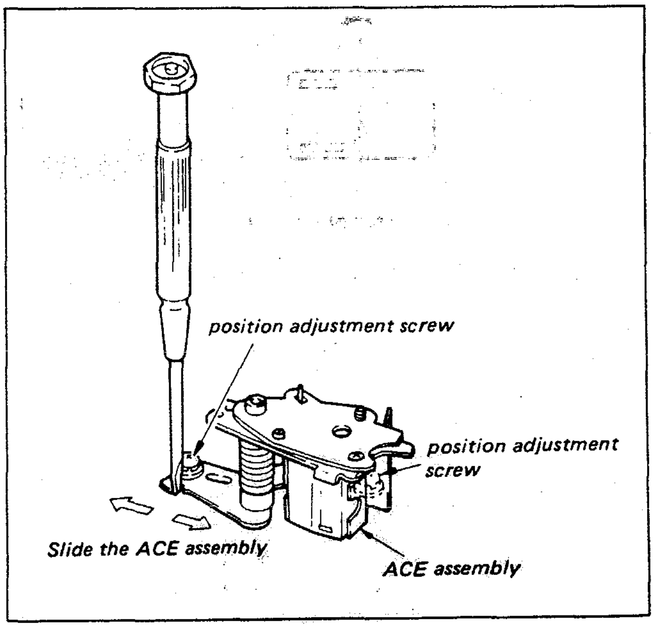
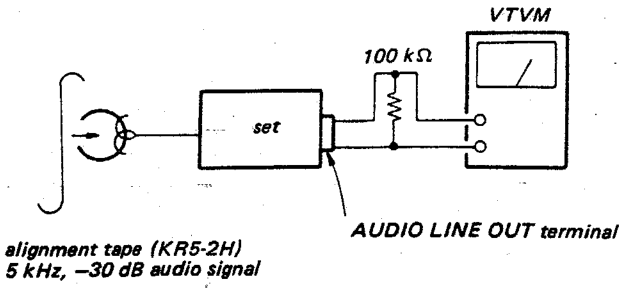

position adjustment screw
position adjustment screw
Slide the ACE assembly
ACE assembly

Fig. 4-15.

4-2-3. Audio head (ACE Assembly) Azimuth Adjustment

[Connections]

1) Playback


VTVM
100 kΩ
set
AUDIO LINE OUT terminal
alignment tape (KR5-2H)
5 kHz, −30 dB audio signal

[Method of adjustment]

1) Play the 5kHz. −30dB audio signal section (RF sweep section) of the alignment tape.
2) Adjust the azimuth adjustment screw until the output level (VTVM indication) is a maximum.
   Note:
   Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).
3) After adjustment, lock the adjustment screw.

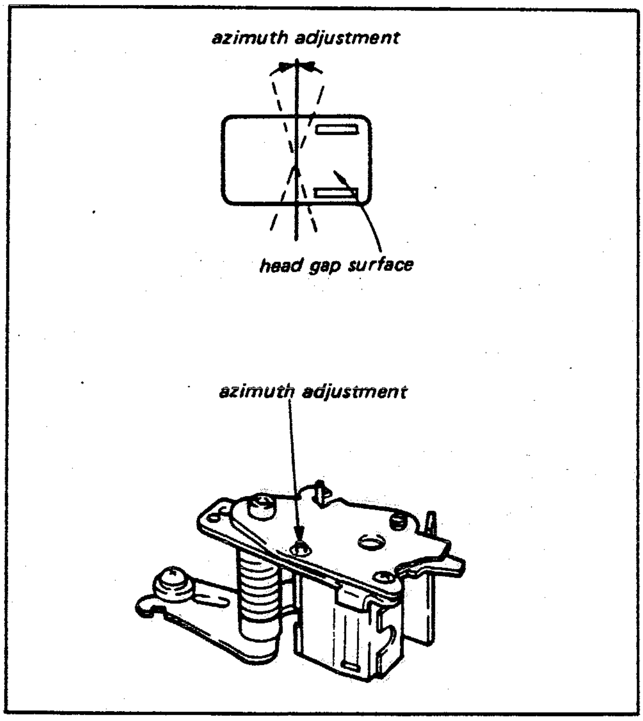

azimuth adjustment
head gap surface
azimuth adjustment

Fig. 4-16.

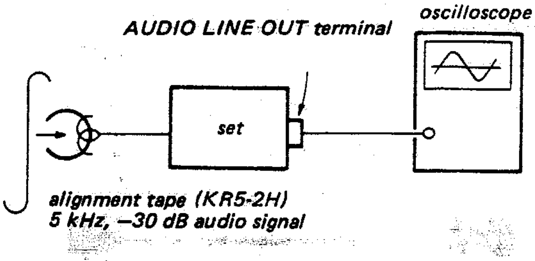
4-2-4. Audio Head (ACE Assembly) Height Adjustment

[Condition]

This adjustment must only be performed after the exit side tracking adjustment has been completed.

[Connections]

1) Playback


AUDIO LINE OUT terminal
oscilloscope
set
alignment tape (KR5-2H)
5 kHz, −30 dB audio signal

[Method of adjustment]

1) Play the 5kHz. −30dB audio signal section (RF sweep section) of the alignment tape.
2) Adjust the height adjustment nut so that the amplitude of the audio line output waveform (5 kHz) becomes a maximum.

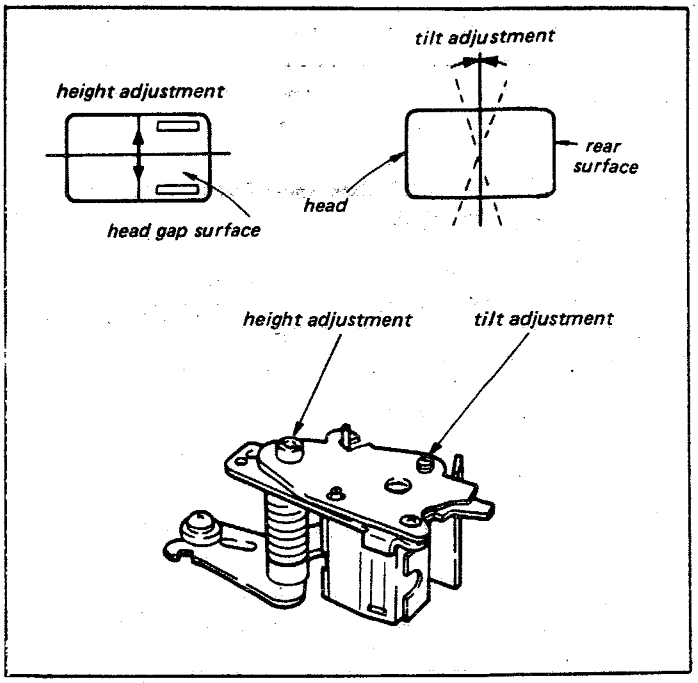

tilt adjustment
height adjustment
rear surface
head
head gap surface
height adjustment
tilt adjustment

Fig. 4-17.

4-3. HOW TO INSPECT THE TAPE TRAVELING WHEN ADJUSTING THE TAPE PATH

Adjust and check the tape path using the alignment tape following the adjustment guide, then check the tape travel using the procedure below.

1) Get one L-830 reel ready (these are widely available commercially). Remove the cassettte cover referring to Fig. 4-1 of the adjustment guide.
2) Run the L-830 tape in playback mode and check the following points.
   - i) Entrance side
     Confirm that the tape contacts the upper flange of the No. 5 and No. 6 guides and the lower flange of the No. 4 guide, and is not damaged or bent. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-18)
   - ii) Exit side
     Confirm that the tape does not contact the upper flange of the No. 7 guide or the No. 8 guide, or the upper or lower flange of the No. 10 guide, and is not scratched. (Some tape curl is allowed but the tape must not be creased.) **(Fig. 4-19)**
   - iii) If the tape was found to not be running correctly in step ii), readjust the tape path using the alignment tape, following the adjustment guide.
     If the tape is not running correctly on the entrance side, refer to section 4-1-2 of the adjustment guide.
     If the tape is not running correctly on the exit side, refer to section 4-1-3 of the adjustment guide.

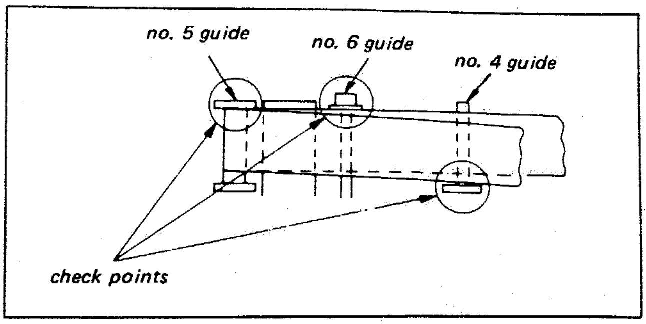


Fig. 4-18.

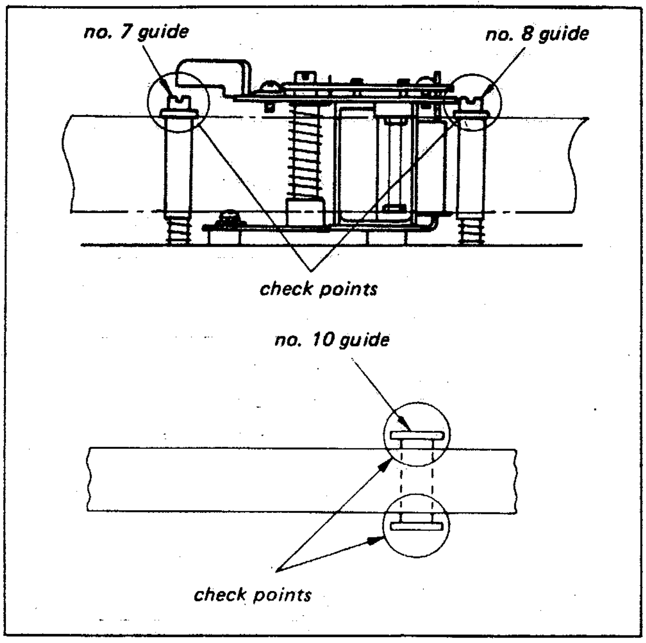


Fig. 4-19.

5. ELECTRICAL ALIGNMENT

All the electrical alignment can be performed by using the equipment mentioned below, the alignment tape, and the PAL colour bar signal (100%).

[Equipment Required]

(1) PAL Colour Monitor TV
(2) Oscilloscope, Dual-trace, Bandwidth ... more than 10 MHz with delay mode
(3) Frequency Counter
(4) PAL Colour-Bar Generator
(5) Digital voltmeter
(6) Audio Signal Generator
(7) Audio level meter (VTVM)
(8) Attenuator
(9) Alignment Tape, type: KR5-2H, Code No. 8-969-995-52
(10) Alignment Tool (Adjusting screwdriver for semi-fixed resistors and coils)
Jig No. SL-0001, Code No. J-6080-001-A

[Setup for Alignment]

The antenna should be connected correctly to the antenna input terminal of the videocassette recorder.
It is important that the video output signal satisfies the specification because the telecast signal received by the incorporated tuner of the videocassette recorder is utilized as the adjustment signal of the machine. The incorporated tuner should be set to the channel with the best reception. The video signal should be checked with an oscilloscope connected to VIDEO OUT (BNC connector). Verify that the sync signal amplitude is approx. 0.3 Vp-p and the video signal amplitude is approx. 0.7 Vp-p at peak. Adjust the fine tuning while observing the signal and the TV screen so that the burst signal amplitude becomes approx. 0.3V ± 0.1 Vp-p. Also confirm that there is not spikes observed at the sync signal portion. (See Fig. 5-1.)
The video (colour bar) signal for the alignment is shown in Fig. 5-1.

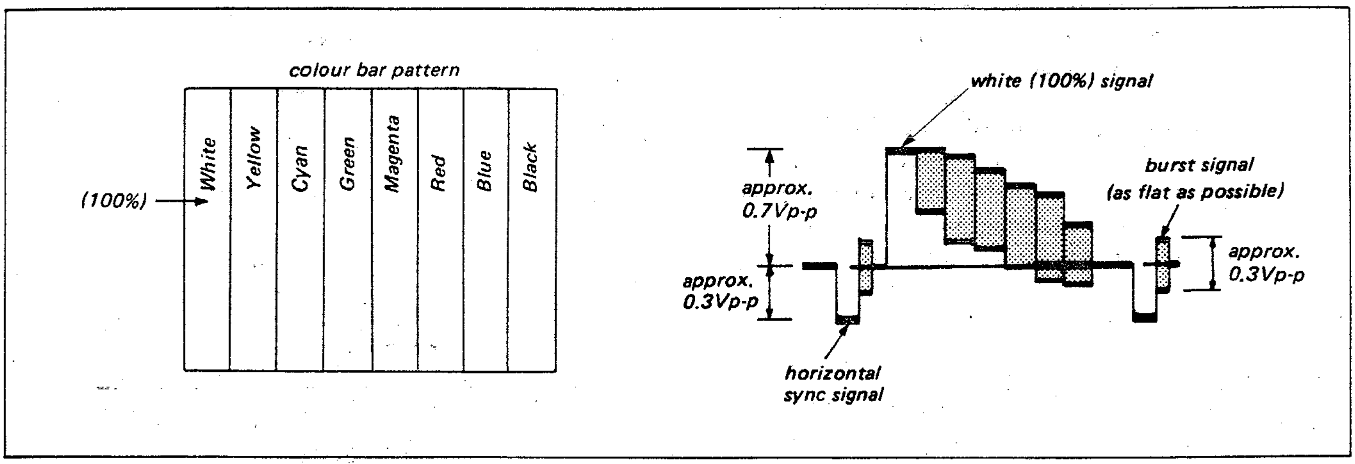


Fig. 5-1. Video (colour-bar) signal

[Alignment Tape]

KR5-2H

	Video signal	Audio signal	Playing time	Use for
1.	Colour bars	3 kHz - 5 dB	5 min	General performance, tape speed checks, switching position adjustment.
2.	Monoscope	333 Hz - 25 dB	5 min	Video head dihedral, audio level adjustment.
3.	RF sweep	5 kHz - 25 dB	5 min	Video, audio frequency characteristics, audio azimuth adjustment marker: 1, 2, 3.58, 4.5, 5.2 MHz
4.	Tracking 1 MHz (CH-B) *1 (Channel B is inserted in every 3 frames.)	1 kHz - 5 dB *2 (Signal is dropped out in the positions where channel B is inserted.)	5 min	Tracking, Audio height adjustments CTL Position check (Check if *1 and *2 are the same position.)

[Alignment Tool for Semi-fixed Variable Resistors and Coils]
Semi-fixed variable resistors and inductances should be adjusted with the alignment tool exclusively prepared for the adjustment of the components. A common screwdriver is too large for adjusting the components from the conductor side of a printed circuit board.

The metal blade of the alignment tool is used for variable resistors and trimmer capacitors and the plastic tip is used for variable inductances.

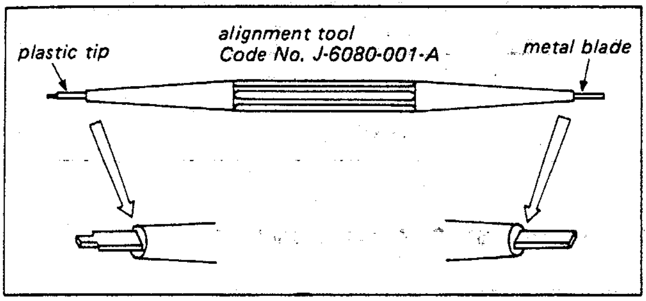

plastic tip
alignment tool
Code No. J-6080-001-A
metal blade

Fig. 5-2. Alignment tool

[Required levels and Impedances of Input and Output]

Video

Input VIDEO IN: BNC connector
1 Vp-p $^{+1.0}_{-0.5}$ Vp-p
75Ω unbalanced, sync negative
VIDEO OUT: BNC connector
1 Vp-p ± 0.1 Vp-p
75Ω unbalanced, sync negative

Audio

Input AUDIO IN: phono jack
47 kΩ, −10 dBs
(0 dBs = 0.775V rms)
Output AUDIO OUT: phono jack
Load impedance less than 10 kΩ
−10 dBs with 47 kΩ load unbalanced

[Colour Bar Signal]
The 100% colour bar signal recorded on the Alignment tape is shown in Fig. 5-3.

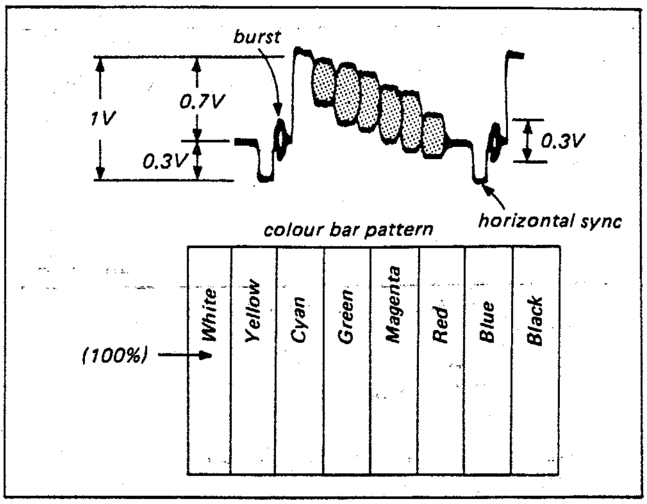
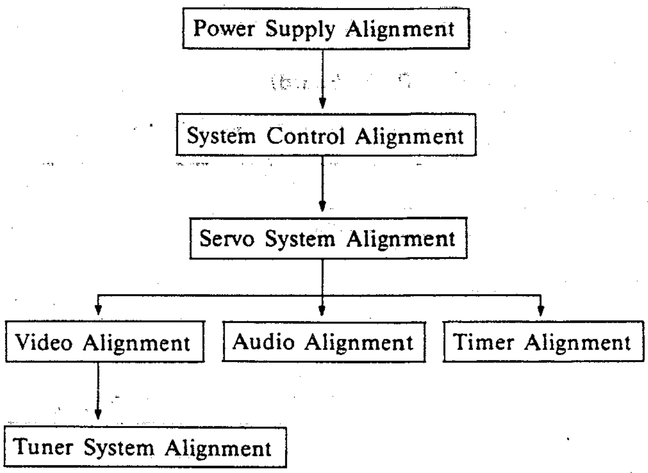

burst
1V
0.7V
0.3V
0.3V
horizontal sync
colour bar pattern
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Fig. 5-3. Colour bar signal recorded on the alignment tape

[Adjustment procedure]
Adjust in the order given below.


Power Supply Alignment
System Control Alignment
Servo System Alignment
Video Alignment
Audio Alignment
Timer Alignment
Tuner System Alignment

5-1. POWER SUPPLY CHECK

5-1-1. AEP, UK, EC MODEL (PS-46 Board)

Measure in E-E mode (power supply switch ON).

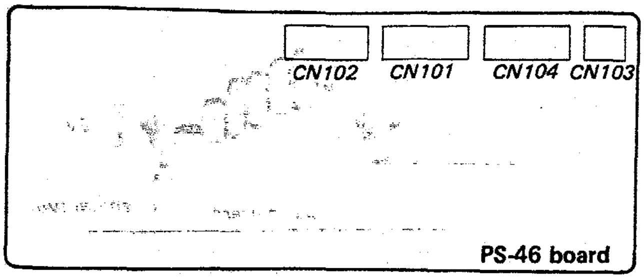


Fig. 5-4. Component layout

1. UN 12V Check
   Pin ⑥ of CN101 shall be 12 ± 0.5V
2. SW 12V Check
   Pin ③ of CN101 shall be 12.2 ± 0.2V
3. SW 9V Check
   Pin ⑤ of CN101 shall be 9.0 ± 0.2V
4. UN 5V Check
   Pin ① of CN101 shall be 5.1 ± 0.5V
5. UN 45V Check
   Pin ② of CN102 shall be 44 ± 3V
6. UN −45V Check
   Pin ③ of CN102 shall be −44 ± 3V

5-1-2. E MODEL (PS-67 Board)

Measure in E-E mode (power supply switch ON).

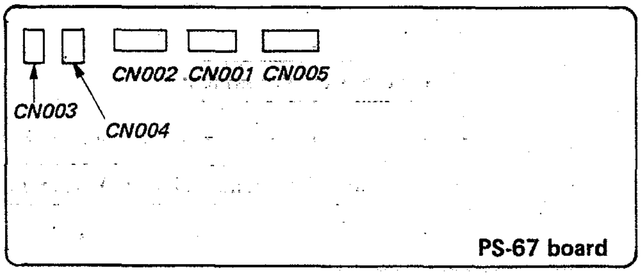


Fig. 5-4. Component layout

1. UN 12V Check
   Pin ⑥ of CN002 shall be 12 ±0.5V.
2. SW 12V Check
   Pin ① of CN001 shall be 12.2 ±0.2V.
   Pin ③ of CN002 shall be 12.2 ±0.2V.
3. SW 9V Check
   Pin ⑤ of CN002 shall be 9.0 ±0.2V.
4. UN 5V Check
   Pin ④ of CN001 shall be 5.0 ±0.5V.
5. UN 39V Check
   Pin ② of CN001 shall be 39 ±2V.
6. UN −39V Check
   Pin ③ of CN001 shall be −39 ±2V.

5-2. SYSTEM CONTROL CHECK (SS-34 Board)

1. **Clock Frequency Check**

Mode: E-E
Signal: None
Frequency counter: Pin (60) of IC601
Check: f: 6 MHz

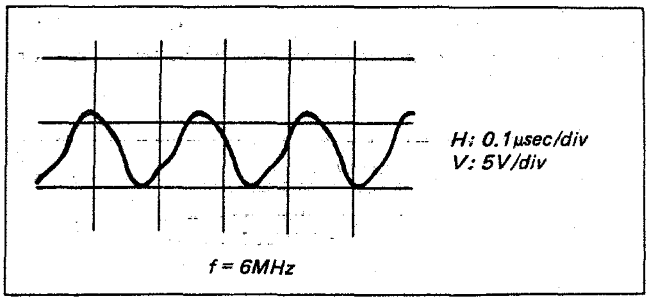


Fig. 5-5.

5-3. SERVO SYSTEM ALIGNMENT

Alignment Sequence

1. Drum servo system alignment
2. Capstan servo system alignment

5-3-1. Drum Servo System Alignment

1) Drum Free Speed Adjustment (SS-34 Board)

Mode: Playback
Signal: Alignment tape colour bar, or monoscope
Oscilloscope: CH-1 TP405 (Pin ⑬ of IC301)
CH-2 TP402 (Pin (39) of IC301)

[Alignment method]

Adjust to 553 μsec ± 10 μsec with RV303.

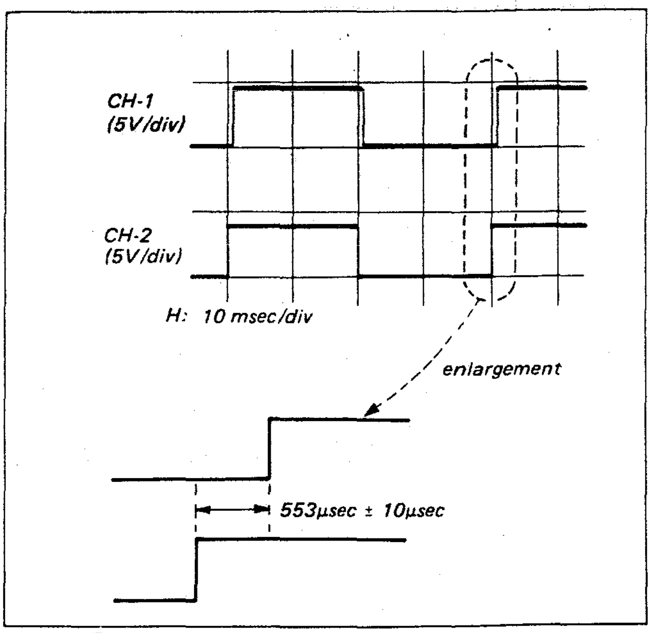


Fig. 5-6. Drum free speed adjustment

2) RF Switching Position Adjustment (SS-34 Board)

Mode: Playback
Signal: Alignment tape colour bar or monoscope
Oscilloscope: CH-1 TP402 (Pin ㊴ of IC301)
CH-2 Pin ㊵ of IC301

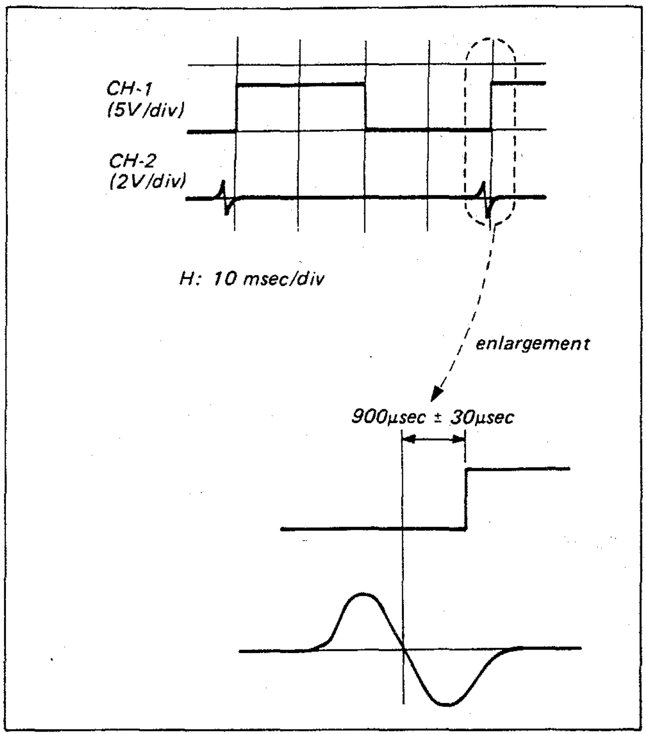

CH-1
(5V/div)
CH-2
(2V/div)
H: 10 msec/div
enlargement
900μsec ± 30μsec

Fig. 5-7. RF switching position adjustment (1)

[Adjustment method]

i) Adjust to 900 μsec ± 30 μsec with RV304 (See Fig. 5-7.)
ii) Change connection of CH-2 only to Pin ㉜ of IC301.
iii) Adjust to 900 μsec ± 30 μsec with RV305 (See Fig. 5-8.)

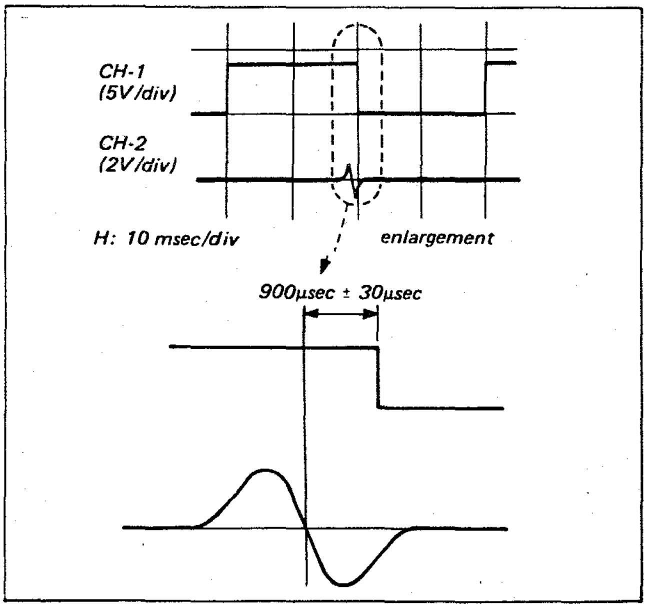

CH-1
(5V/div)
CH-2
(2V/div)
H: 10 msec/div
enlargement
900μsec ± 30μsec

Fig. 5-8. RF switching position adjustment (2)

3) PICTURE SEARCH, f_H Adjustment (SS-34 Board)

Mode: PICTURE SEARCH (FWD)
Signal: Alignment tape colour bar or monoscope
Frequency counter: Pin ③ of CN309 (TP404)

[Adjustment method]

Adjust to 64 μsec ± 0.3 μsec with RV307.

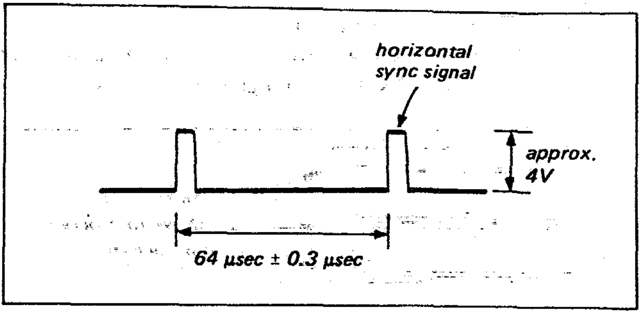

horizontal sync signal
approx. 4V
64 μsec ± 0.3 μsec

Fig. 5-9. PICTURE SEARCH, drum free speed adjustment

5-3-2. Capstan Servo System Alignment

1) Capstan Free Speed Adjustment (SS-34 Board)

Mode: playback
Signal: Alignment tape colour bar or monoscope
Oscilloscope: TP407 (Pin ⑳ of IC301)

[Adjustment method]

Adjust the duty (ratio for A and B) to 50% ± 5% with the RV301.

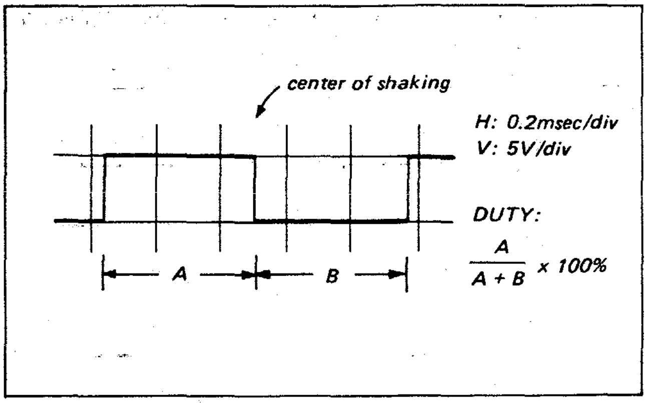

center of shaking
H: 0.2msec/div
V: 5V/div
DUTY:
A / A + B x 100%
A
B

Fig. 5-10. Capstan free speed adjustment

2) PICTURE SEARCH, Capstan Free Speed Adjustment (SS-34 Board)

Mode: PICTURE SEARCH (FWD)
Signal: Alignment tape colour bar or monoscope

[Adjustment method]

i) Set up the picture search (forward) mode and adjust with RV302 so that the progression of noise bars becomes as slow as possible.

ii) Set up the picture search (reverse) mode and check that noise bars do not progress very quickly.

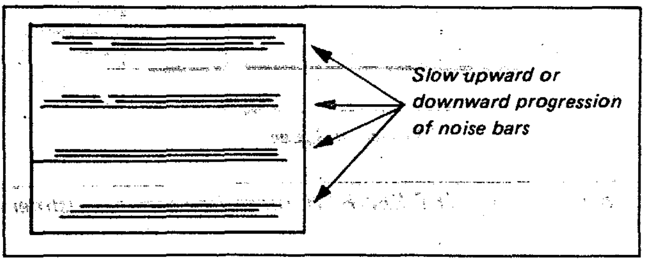

Slow upward or downward progression of noise bars

Fig. 5-11. PICTURE SEARCH, capstan free speed adjustment

3) Tracking Center Adjustment (SS-34 Board)

Mode: Playback
Signal: Alignment tape colour bar, or monoscope
Oscilloscope: CH-1 TP405 (Pin ⑬ of IC301)
CH-2 TP406 (Pin ⑮ of IC301)

[Adjustment method]

i) Set the TRACKING knob to the center click position.

ii) Adjust to 7.05 msec ± 0.05 msec with RV306. (See Fig. 5-12.)

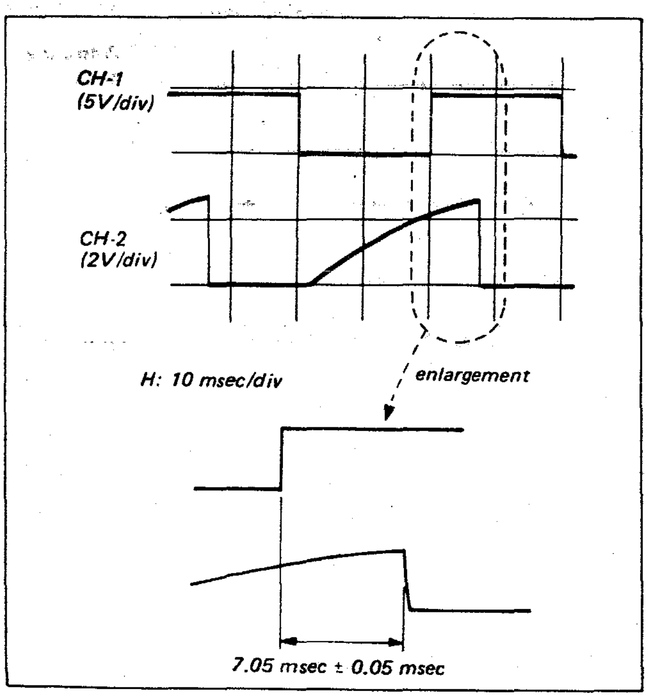

CH-1
(5V/div)
CH-2
(2V/div)
H: 10 msec/div
enlargement
7.05 msec ± 0.05 msec

Fig. 5-12. Tracking center adjustment

5-4. PAL VIDEO SYSTEM ALIGNMENT

As a rule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.
The alignment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording systems.
Colour video signal supplied by the PAL colour bar generator is used as video input signal for video system alignment in the record mode. Check that the sync and colour burst signals conform to the specifications designated in "Set-up for Alignment" in Fig. 5-1.

5-4-1. Playback System Alignment

1. Playback frequency characteristic adjustment
2. Expand adjustment
3. Playback video level adjustment
4. Y-comb adjustment
5. Dropout compensator adjustment
6. AFC adjustment
7. AFC offset adjustment
8. 4.43MHz REF adjustment
9. Chroma comb filter adjustment
10. Carrier balance adjustment
11. JOG PLL adjustment
12. JOG exchange chroma level adjustment

5-4-2. Record System Alignment

1. Sync AGC adjustment
2. Compress adjustment
3. Carrier set adjustment
4. Deviation adjustment
5. Dark clip and white clip adjustment
6. Y record current adjustment
7. Pilot burst signal level adjustment
8. Chroma record current adjustment

5-4-1. Playback System Alignment

1) Playback Frequency Characteristic Adjustment (RP-20 Board)
- Adjust both the A and B channels.
- The B channel indicated by ( ).

Mode: Playback
Signal: Alignment tape RF sweep
Oscilloscope: Pin ⑥ of CN502
External trigger: Pin ③ of CN502

[Adjustment method]

i) Turn tracking knob to maximum output.
ii) Adjust RV503 to make the 2MHz amplitude of A and B channels equal. (See Fig. 5-16)
iii) Set the trigger slope to −(+).
iv) Adjust the 5.2MHz amplitude to 1/2 − 2/3 of the 2MHz amplitude with RV502 (RV501).

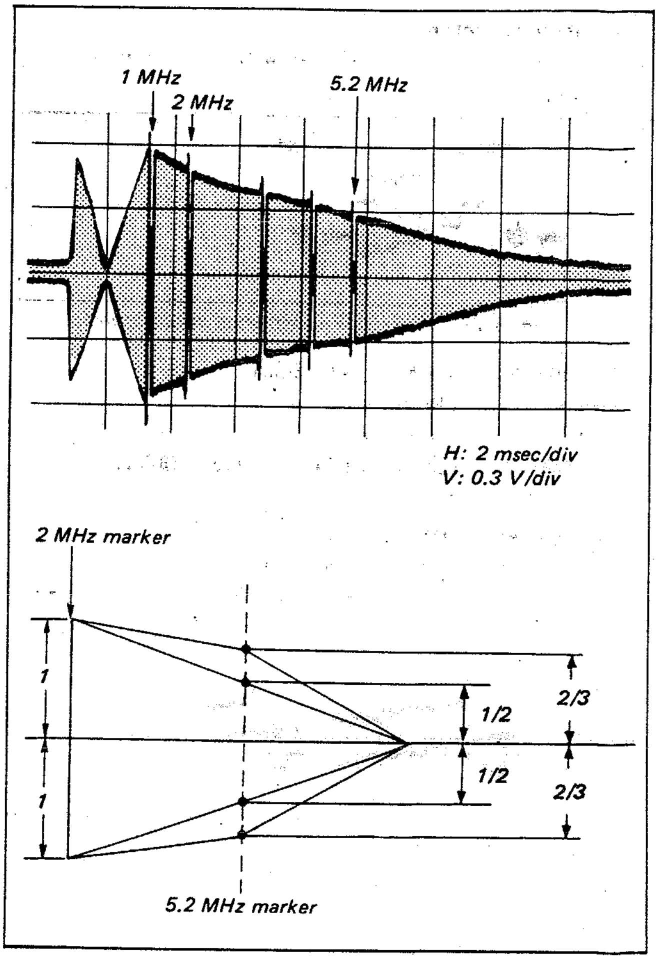


Fig. 5-16. Playback amplifier frequency characteristic adjustment

2) Expand Adjustment (YC-31 Board)

Mode: Playback
Signal: Colour bar
Digital voltmeter: See Fig. 5-17.

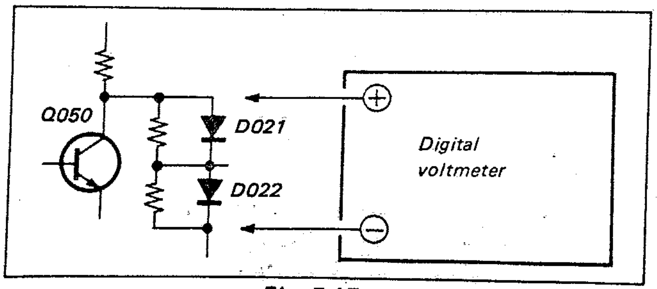


Fig. 5-17.

[Adjustment method]

i) Adjust to 0.45 ± 0.01 Vdc with RV020.

3) Playback Video Level Adjustment (YC-31 Board)

Mode: Playback

Signal: Alignment tape colour bar

Oscilloscope: VIDEO OUT (75Ω terminated) on YC-31 Board

[Adjusment method]

i) Adjust to 1.0V ± 0.05Vp-p with RV019 on YC-31 Board.

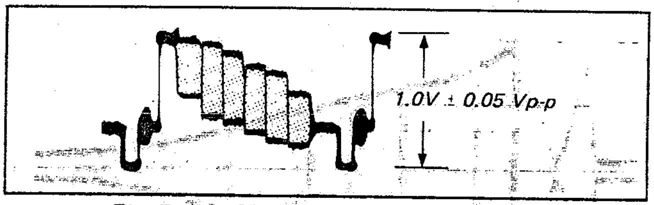


Fig. 5-18. Playback video level adjustment

4) Y-Comb Adjustment (YC-31 Board)

Mode: Playback

Signal: Colour bar

Oscilloscope: Pin ⑧ of IC401 (Attach 100kΩ resistor to tip of probe (10:1)).

[Adjustment method]

i) Adjust RV401 for minimum output.

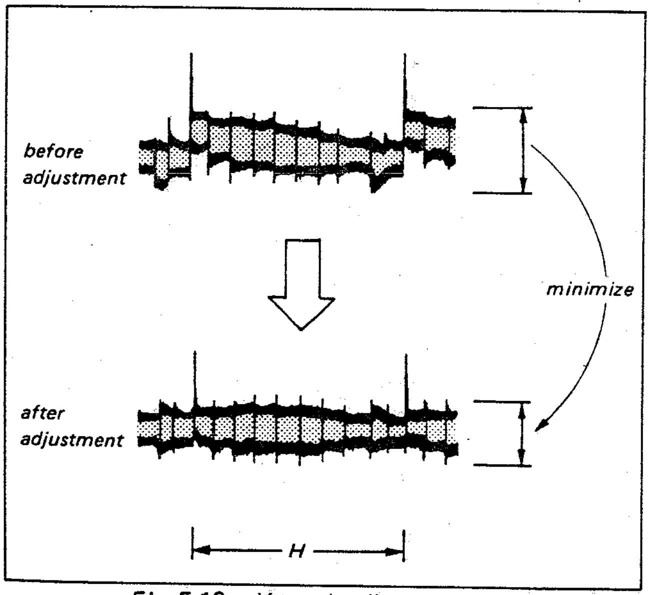


Fig. 5-19. Y-comb adjustment

5) Dropout Compensator Threshold Adjustment (YC-31 Board)

Mode: Playback

Signal: A recorded tape with dropouts

[Adjustment method]

i) Turn RV010 fully clockwise (↻) as seen from the pattern side. In this state, dropouts appear on the monitor screen.

ii) Slowly turn RV010 counterclockwise (↺) and set to make the dropouts disappear.

iii) Rewind the tape and verify that the dropouts described in (i) above have disappeared.

6) AFC Adjustment (YC-31 Board)

Mode: E-E

Signal: Colour bar

Oscilloscope: Pin ㉖ of IC006

[Adjustment method]

i) Adjust to 4.50Vdc ± 0.01 Vdc with RV007.

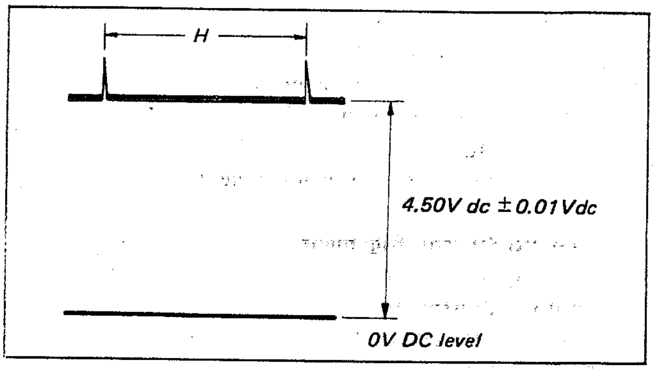


Fig. 5-20. AFC adjustment

7) AFC Offset Adjustment (YC-31 Board)

Mode: Record

Signal: Colour bar

Oscilloscope: Pin ㉖ of IC006

[Adjustment method]

i) Adjust RV006 so that the fluctuation of DC level is minimum.

ii) After this adjustment, check the AFC adjustment.

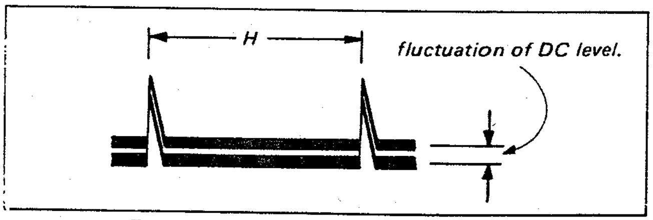


Fig. 5-21. AFC offest adjustment

8) 4.43MHz REF. adjustment (YC-31 Board)

Mode: PB

Signal: Colour bar

Frequency counter: Pin ⑭ of IC006

[Adjustment method]

i) Adjust to 4.433619MHz ± 5 Hz with CV001.

9) Chroma Comb Filter Adjustment (YC-31 Board)
Mode: Playback
Signal: Alignment tape colour bar
Adjust while observing the monitor TV screen.

[Adjustment method]
i) Minimize beats with RV501 and LV501.

10) Carrier Balance Adjustment (YC-31 Board)
Mode: Playback
Signal: Alignment tape colour bar
Adjust while observing the monitor TV screen.

[Adjustment method]
i) Minimize beats with RV005.

11) JOG PLL Adjustment (YC-31 Board)
Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ⑩ of IC003

[Adjustment method]
Adjust to 20μsec ±1μsec with RV003. (See Fig. 5-28.)

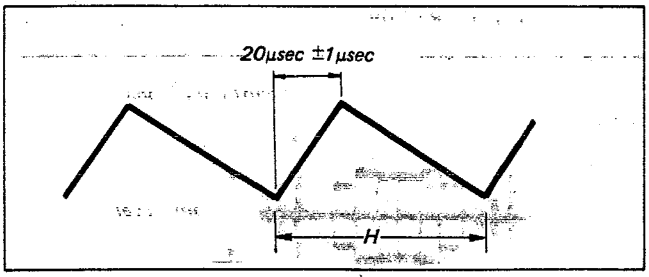


Fig. 5-22. JOG PLL adjustment

12) JOG Exchange Chroma level Adjustment (YC-31 Board)
Mode: PB • PAUSE (STILL)
Signal: colour bar
Oscilloscope: Pin ⑧ of IC003

[Adjustment method]
i) Adjust RV002 so that the fluctuation of level is minimum.

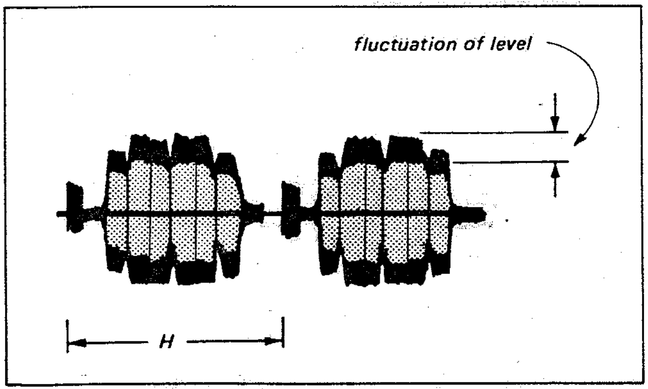


Fig. 5-23. JOG EXCH. C. level adjustment

5-4-2. Record System Alignment

1) Sync AGC Adjustment (YC-31 Board)
Mode: E-E
Oscilloscope: VIDEO OUT (75Ω terminated)
Signal: Colour bar (V : S = 7 : 3)

[Adjustment method]
i) Adjust to 1.0V ±0.05Vp-p with RV021.

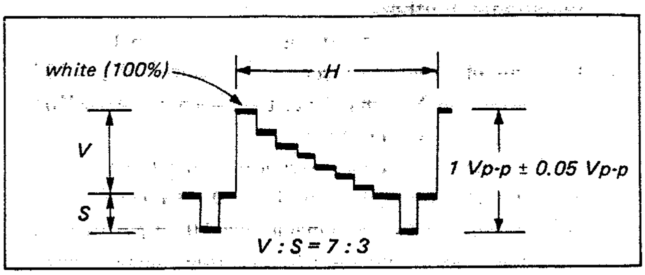


Fig. 5-24. Sync AGC adjustment

2) Compress Adjustment (YC-31 Board)
Mode: E-E
Signal: None
Digital voltmeter: See Fig. 5-25.

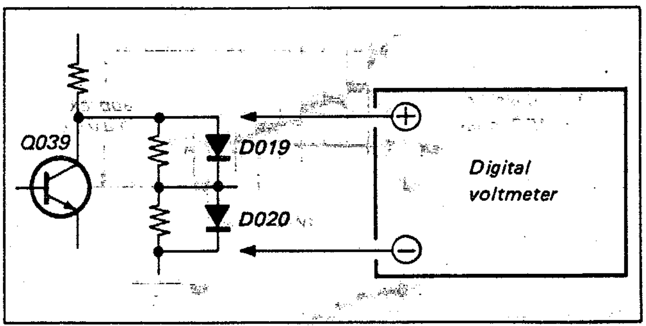


Fig. 5-25.

[Adjustment method]
i) Adjust to 0.3V ± 0.01 Vdc with RV016.

3) Carrier Set Adjustment (YC-31 Board)
Mode: E-E
Signal: None
Frequency counter: Pin ㉕ of IC009

[Adjustment method]
1) Adjust to 3.8MHz ±0.04MHz with RV014.

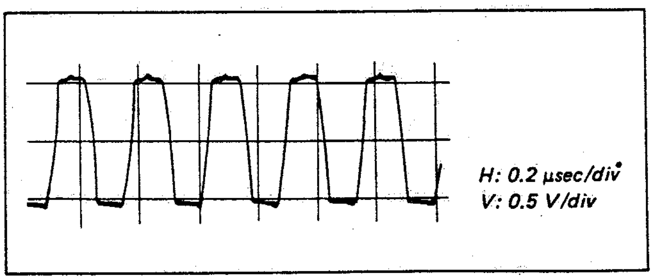


Fig. 5-26. Carrier set adjustment

4) Deviation Adjustment (YC-31 Board)

- The playback system adjustment and the carrier set adjustment in Paragraph 3) above must be completed before making this adjustment.

Mode: Self-recording and playback
Signal: Colour bar
Oscilloscope: Collector of Q038, VIDEO OUT (75Ω terminated)

[Adjustment method]

i) Supply the colour bar signal and set up E-E mode.
ii) Connect the oscilloscope to Collector of Q038.
iii) Adjust the Y signal level to 0.4Vp-p with RV015.
iv) Set up RECORD mode.
v) Playback the recorded section of the tape.
vi) Connect the oscilloscope to VIDEO OUT.
vii) Check that the video signal level is 1.0 Vp-p ± 0.05 Vp-p. if the level is outside of this range, repeat Steps iv) through vi) above adjusting with RV015 until the standard value is obtained.

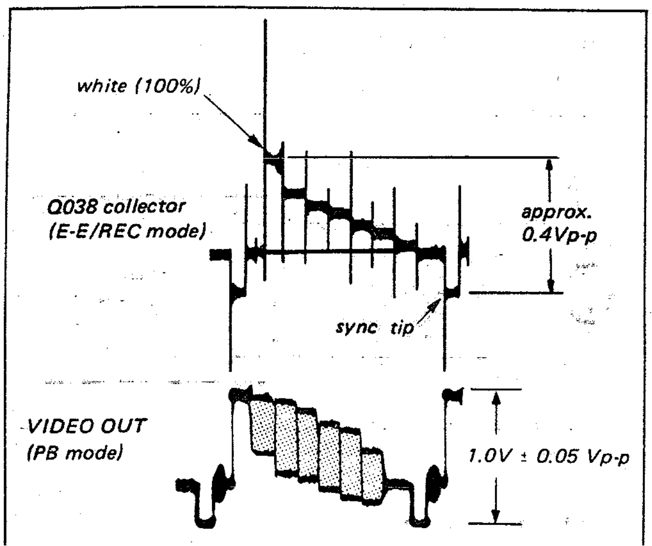


Fig. 5-27. Deviation adjustment

5) Dark Clip and White Clip Adjustment (YC-31 Board)

Mode: E-E
Signal: None
Frequency counter: Pin ㉕ of IC009

[Adjustment method]

i) Connect a jumper wire between the base of Q041 and ground.
ii) Adjust to 2.82MHz ±0.1MHz with RV012.
iii) Check that the voltage of the collector of Q038 is 1.5V ±0.3V dc.
iv) Remove the jumper wire.
v) Connect a jumper wire between the base of Q041 and the 9V line (collector of Q042).
vi) Adjust to 6.66MHz ±0.1MHz with RV013.
vii) Remove the jumper wire.

6) Y Record Current Adjustment (YC-31Board)

Mode: Record
Signal: Colour bar
Oscilloscope: Pin ⑤ of CN002

[Adjustment method]

i) Adjust to 450mV ±20mVp-p with RV602.

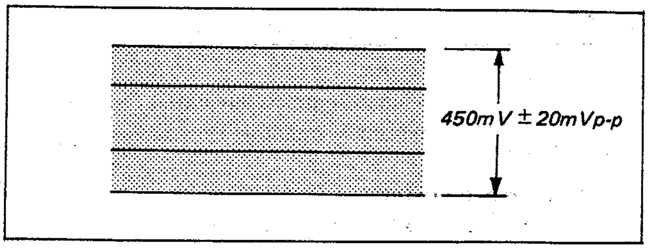


Fig. 5-28. Y record current adjustment

7) Pilot Burst Signal Level Adjustment (YC-31 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ① of IC006

[Adjustment method]

i) Align the pilot burst signal with the chroma signal level using RV009.

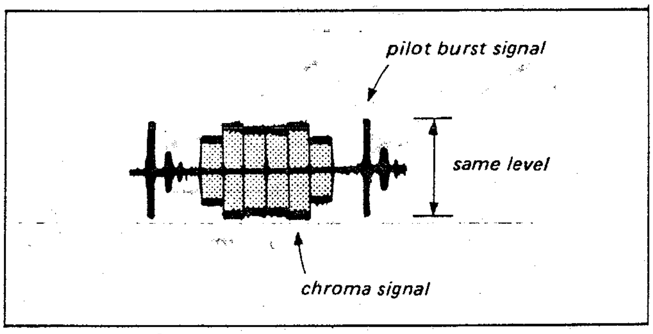


Fig. 5-29. Pilot burst signal level adjustment

8) Chroma Record Current Adjustment (YC-31 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ⑦ of CN002

[Adjustment method]

i) Adjust to 180mV ±10mVp-p with RV008.

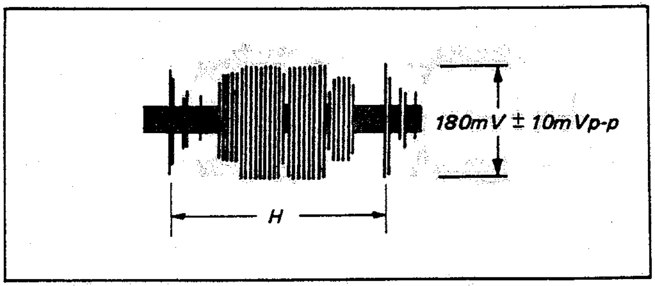


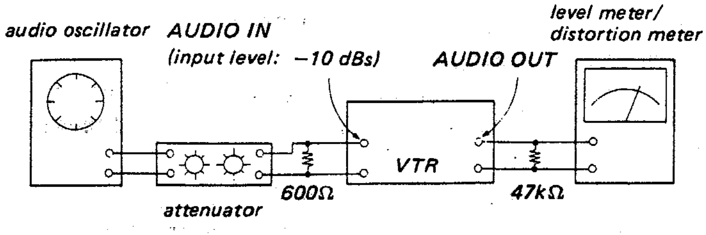
Fig. 5-30. Chroma record current adjustment

5-5. AUDIO SYSTEM ADJUSTMENT (TA-22 Board)

Use a Dynamicron tape for adjustments.

[Connection of Related Equipment]

Note: Set the INPUT SELECT switch to LINE.
Set the TONE switch to HIGH.



[Adjustment method]

1. ACE head adjustment... See "Mechanical Adjustment"
2. Playback frequency characteristic check
3. Playback output level adjustment
4. Bias oscillator check
5. Record bias adjustment
6. Record level check
7. Overall frequency characteristic check
8. Overall S/N check
9. Overall distortion check

1. ACE Head Adjustment

Refer to "Mechanical Adjustment"

2. Playback Frequency Characteristic Check

(1) Play back 333 Hz and 5 kHz from the alignment tape and check that the level difference between 333Hz and 5kHz is within 0dB ±1dB.

3. Playback Output Level Adjustment

(1) Play back 333 Hz from the alignment tape and adjust so that the output level is −30 dBs ± 0.5 dB with RV301.

4. Bias Oscillator Check

(1) Set the input signal level to zero and set up the RECORD mode.

(2) Connect a frequency counter to Pin ② of CN303. The reading should be 65kHz ±6.5kHz.

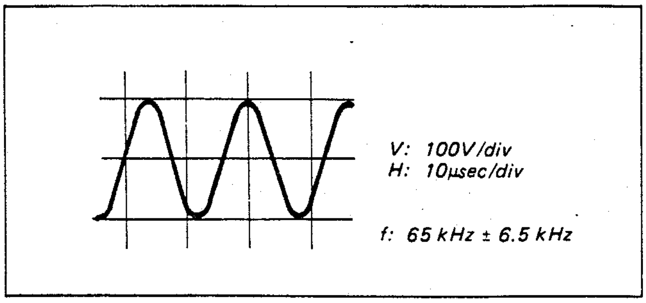


Fig. 5-31. Bias oscillator check

5. Record Bias Adjustment

Check that "Playback frequency characteristic check has been made.

(1) Connect TP301 and TP306 (GND) with a jumper wire so as to turn off the AGC operation.

(2) Supply a 333 Hz signal.

(3) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is −30 dBs.

(4) Record signals.

(5) Supply a frequency of 7 kHz and perform Steps (3) and (4) above.

(6) Play back the recorded section of the tape and check that the output level at 7 kHz is ±1 dB relative to the output level at 333 Hz. If the level is outside this range, repeat Steps (2) through (5) adjusting with RV331 until the standard is met.

(7) Remove the jumper wire after making the adjustment.

6. Record Level Check

(1) Supply a 333Hz signal at −10dBs.

(2) Set up the E-E mode.

(3) Check that the output level is −10dBs ±3dB.

(4) Record signals.

(5) Play back the recorded section of the tape and check that the output level is −9dBs ±3dB.

7. Overall Frequency Characteristic Check

(1) Connect TP301 and TP306 (GND) with a jumper wire so as to turn off the AGC operation.

(2) Connect a 333 Hz signal.

(3) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is −30 dBs.

(4) Record signals.

(5) Change the frequency to 50 Hz, 100 Hz, 7 kHz and 10 kHz and repeat Steps (3) and (4).

(6) Play back the recorded section of the tape and verify that the level is within the specification.

Standard values: With reference to the 333 Hz playback output level.

50 Hz $^{+2.5}_{-10}$ dB

100 Hz $^{+2.5}_{-3}$ dB

7 kHz $^{+2.5}_{-2.5}$ dB

10 kHz $^{+2.5}_{-6}$ dB

(7) If the specified values cannot be attained, perform 5 again, "Record Bias Adjustment".

(8) Remove the jumper wire after making the adjustment.

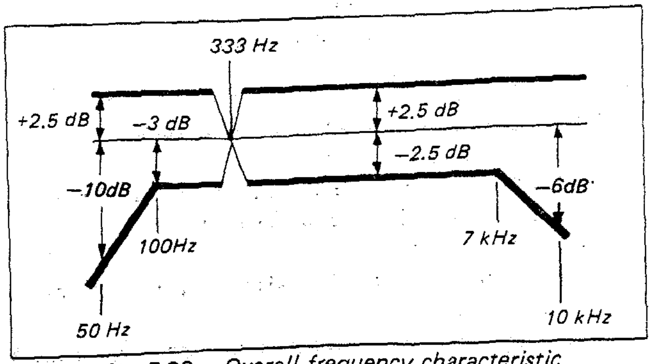


Fig. 5-32. Overall frequency characteristic

8. Overall S/N Check

- (1) Supply a 333 Hz signal at −10 dBs.
- (2) Record signals.
- (3) Set the input signal level to zero and record signals.
- (4) Play back the recorded section of the tape and check that the output level difference is greater than 38 dB.

9. Overall Distortion Check

- (1) Supply a 333 Hz signal at −10 dBs.
- (2) Record signals.
- (3) Play back the recorded section of the tape and verify that the distortion is below 4%.

5-6. TUNER SYSTEM ADJUSTMENT (TA-22 Board)

1) Tuner AGC Adjustment

- (1) Set the DX/LOCAL switch on the rear panel to DX.
- (2) Input RF signals (West germany model: 52dBμ/75Ω terminated, other models: 55dBμ/75Ω terminated) from a colour bar generator, etc.
- (3) Connect a digital voltmeter to TP001 (Pin ④ of IC001).
- (4) Adjust RV001 to 7.2V ± 0.1V dc.

2) AFT Adjustment

- (1) Input RF signals, and press FINE + or FINE − button finely for the best picture quality, while watching the monitor screen.
- (2) Connect a digital voltmeter to pin ⑤ of IC001.
- (3) Adjust T005 to 6V dc.
- (4) Press AFT button to turn on the AFT operation, receive each channel and check to make sure that there is no beat or picture disturbance.

5-7. TIMER SYSTEM ADJUSTMENT (TM-57 Board)

1) Clock Adjustment

- (1) Connect a frequency counter to pin (63) of IC001.
- (2) Adjust oscillation period (T) with TC001 so the value will be as follows.

$$T = (30.51750 + 0.000015 \times Cp)\mu sec \pm 0.0001\mu sec$$

Cp: Probe capacity (PF) of the frequency counter

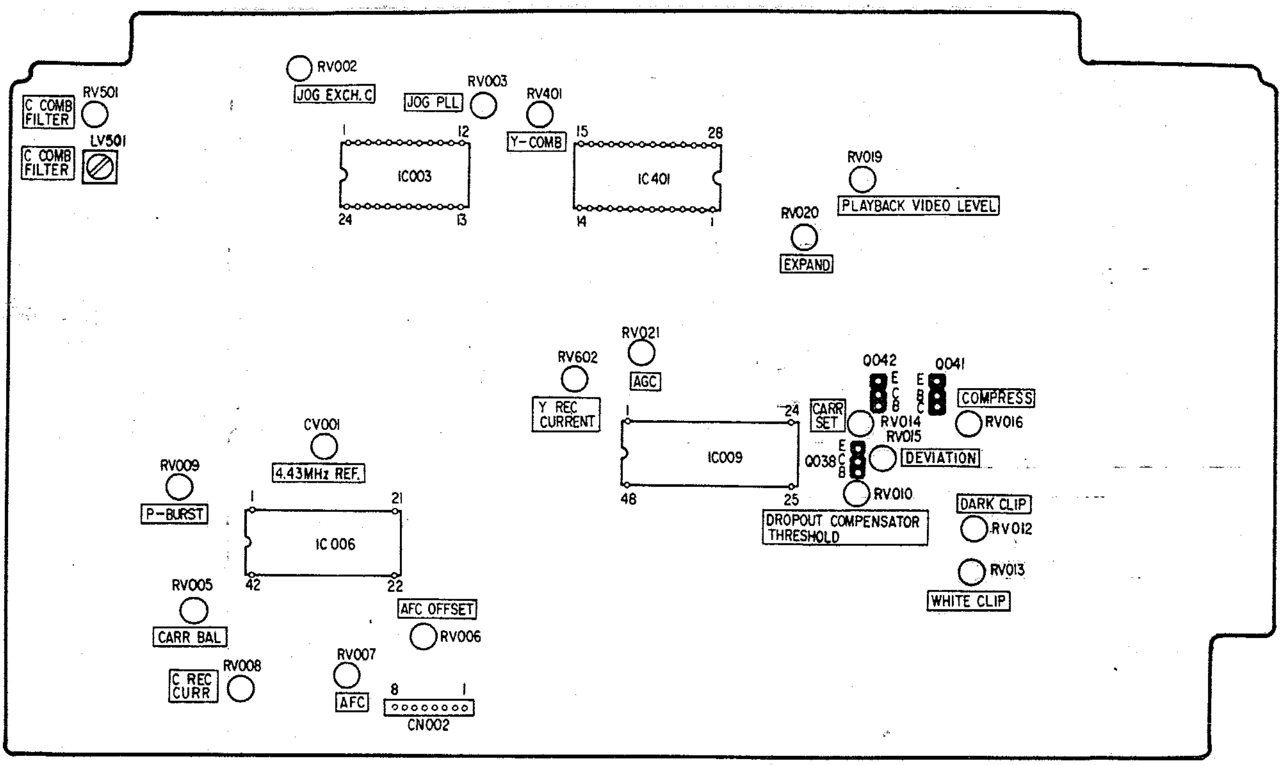
2) System Clock Adjustment

- (1) Connect a frequency counter to pin ㉖ of IC001.
- (2) Adjust oscillation frequency (f) to the following value with RV001.

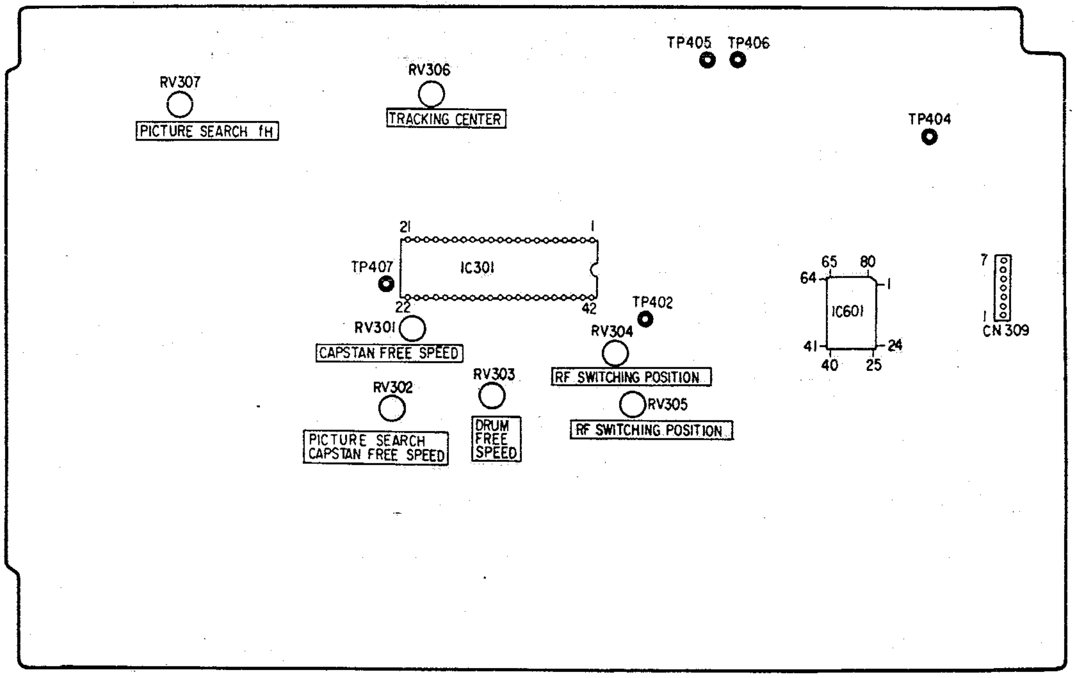
$$f = (2.60 - 0.0041 \times Cp)MHz \pm 0.05MHz$$

Cp: Probe capacity (PF) of the frequency counter

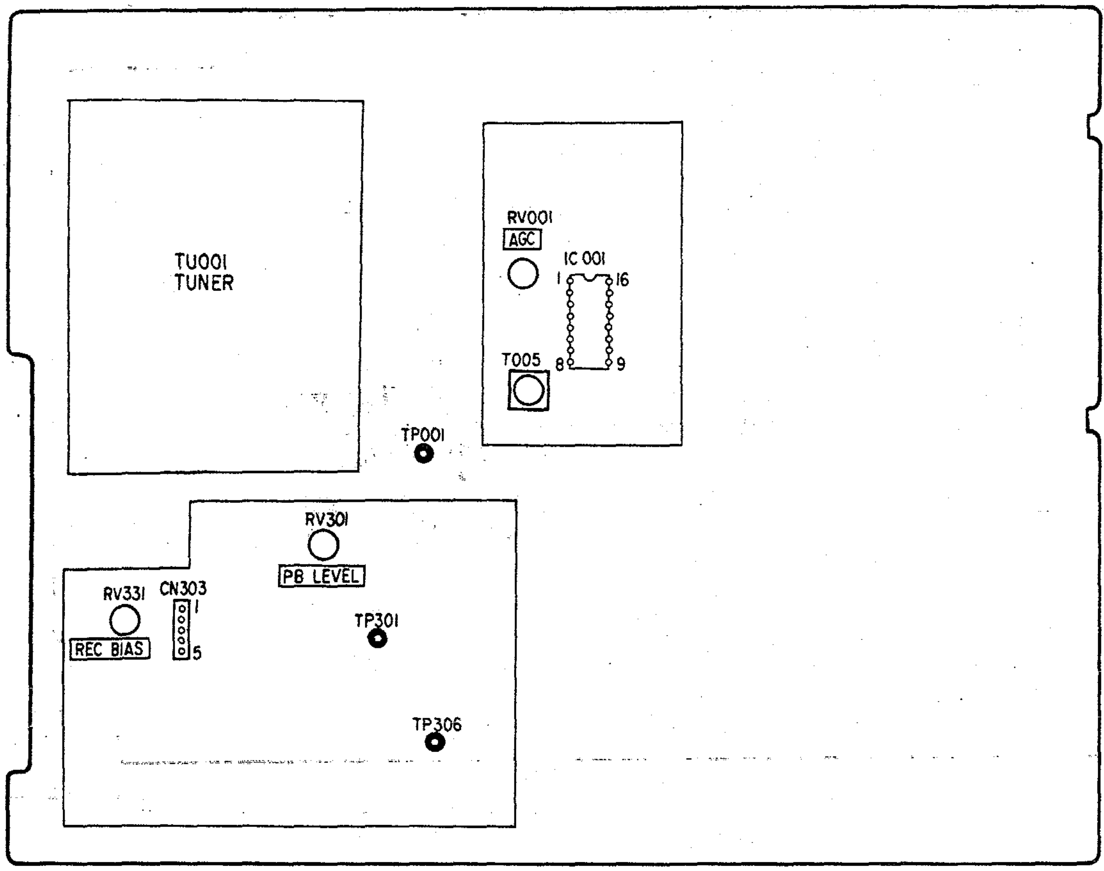
YC-31 BOARD (CONDUCTOR SIDE)


RV002
JOG EXCH.C
RV003
JOG PLL
RV401
Y-COMB
RV501
C COMB FILTER
LV501
C COMB FILTER
1
12
IC003
24
13
15
28
IC401
14
1
RV019
PLAYBACK VIDEO LEVEL
RV020
EXPAND
RV021
AGC
RV602
Y REC CURRENT
Q042
Q041
E
C
B
COMPRESS
CARR SET
RV014
RV016
RV015
DEVIATION
Q038
IC009
24
25
48
RV010
DROPOUT COMPENSATOR THRESHOLD
DARK CLIP
RV012
RV013
WHITE CLIP
CV001
4.43MHz REF.
RV009
P-BURST
1
21
IC 006
42
22
RV005
CARR BAL
AFC OFFSET
RV006
RV007
AFC
RV008
C REC CURR
8
1
CN002

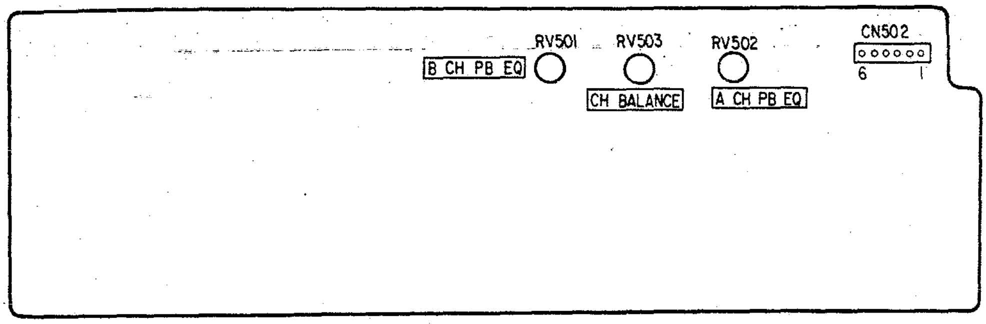
SS-34 BOARD (COMPONENT SIDE)


TP405
TP406
RV307
PICTURE SEARCH fH
RV306
TRACKING CENTER
TP404
21
1
IC301
TP407
22
42
TP402
RV301
CAPSTAN FREE SPEED
RV304
RF SWITCHING POSITION
RV302
PICTURE SEARCH CAPSTAN FREE SPEED
RV303
DRUM FREE SPEED
RV305
RF SWITCHING POSITION
65
80
64
1
IC601
41
24
40
25
7
1
CN 309

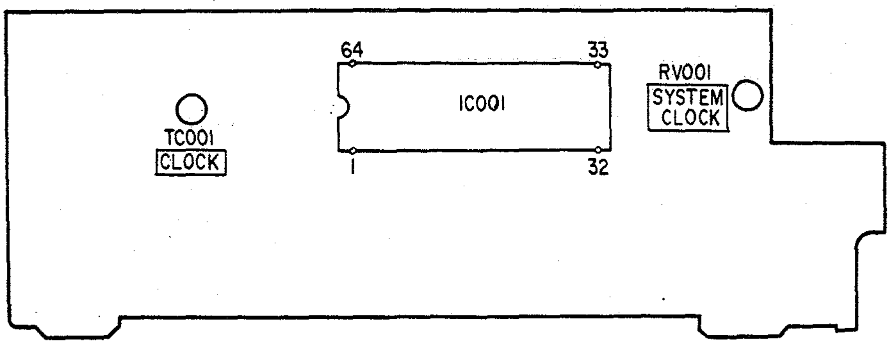
TA-22 BOARD (COMPONENT SIDE)


TU001
TUNER
RV001
AGC
IC 001
1
16
8
9
T005
TP001
RV301
PB LEVEL
RV331
REC BIAS
CN303
1
5
TP301
TP306

RP-20 BOARD (COMPONENT SIDE)

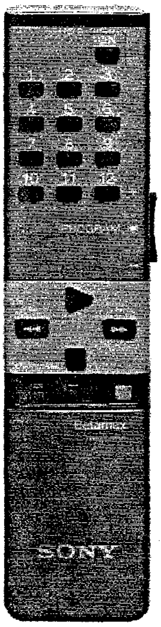

RV501
B CH PB EQ
RV503
CH BALANCE
RV502
A CH PB EQ
CN502
6
1

TM-57 BOARD (COMPONENT SIDE)


TC001
CLOCK
64
33
IC001
1
32
RV001
SYSTEM
CLOCK

RMT-230

SERVICE MANUAL



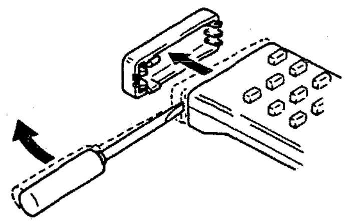
AEP Model
UK Model
E Model

SPECIFICATIONS

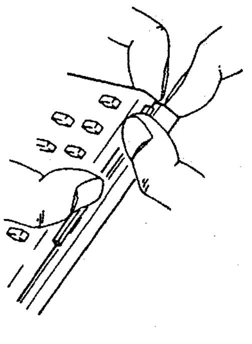
Remote Commander RMT-230

Remote control system	Infrared control
Power requirements	3V DC, 2 IEC designation R6 batteries (size AA)
Dimensions	Approx. 45 × 20 × 175 mm (w/h/d) (1³/₄ × ³/₄ × 7 inches) incl. projecting parts and controls
Weight	Approx. 105 g (3.7 oz) incl. batteries

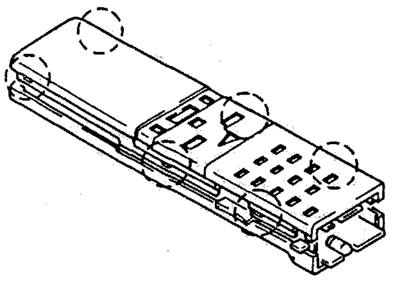
Disassembly



① Remove the front panel by prying up with a screwdriver.



② While pulling the lower case outward, lift the upper case and free the claw.



③ Free all 6 claws similarly.

REMOTE COMMANDER

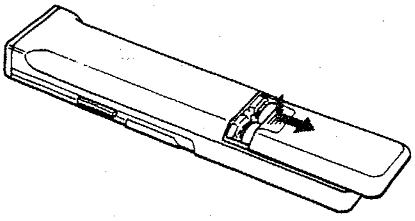
SONY®

1. REMOTE CONTROL OPERATION

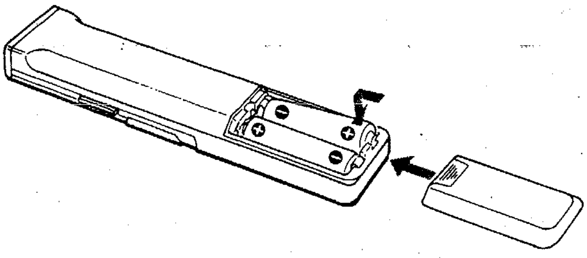
You can control almost all the functions of this video cassette recorder from your armchair using the supplied Remote Commander.

BATTERY INSERTION

1 Open the lid.



2 Insert two IEC designation R6 batterries with correct polarity.



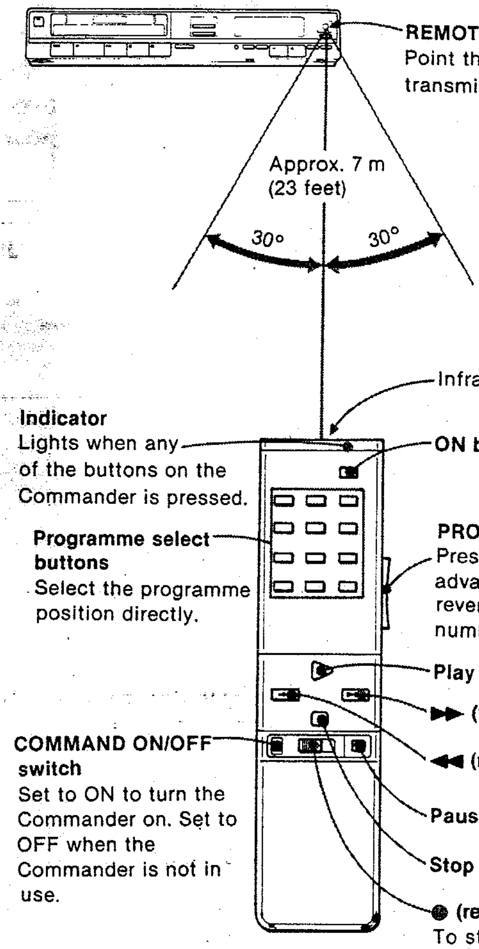
3 Close the lid firmly.

Battery life
In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the Commander are pressed.

If the Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Notes
- There should be no obstacles between the Commander and the REMOTE SENSOR of the recorder.
- The shorter the distance between the Commander and the recorder, the wider the angle within which the recorder can be controlled.

OPERATION



REMOTE SENSOR
Point the infrared transmitter here.

Infrared transmitter

Indicator
Lights when any of the buttons on the Commander is pressed.

ON button

Programme select buttons
Select the programme position directly.

PROGRAM scan button
Press the + side to advance or the − side to reverse the programme numbers.

Play button

▶▶ (fast-forward) button

◀◀ (rewind) button

COMMAND ON/OFF switch
Set to ON to turn the Commander on. Set to OFF when the Commander is not in use.

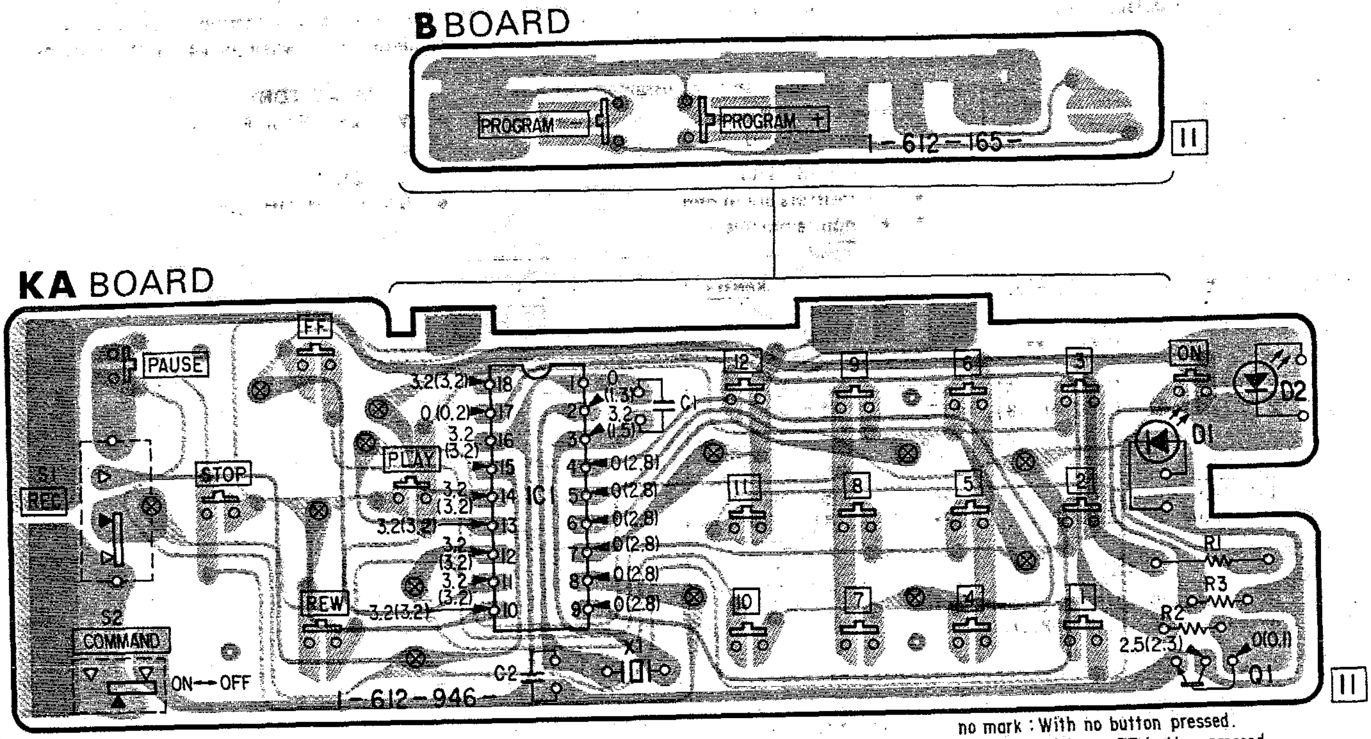
Pause button

Stop button

● (record) button
To start recording, slide to the right.

2. PRINTED WIRING BOARDS

– Conductor Side –


B BOARD
PROGRAM –
PROGRAM +
1-612-165
II
KA BOARD
FF
PAUSE
S1
REC
STOP
PLAY
REW
S2
COMMAND
ON←→OFF
IC1
C1
C2
X1
1-612-946
12
11
10
9
8
7
6
5
4
3
2
1
ON
D1
D2
R1
R2
R3
Q1
2.5(2.3)
0(0.1)
3.2(3.2)
0(0.2)
0(1.3)
3.2(1.5)
0(2.8)
II

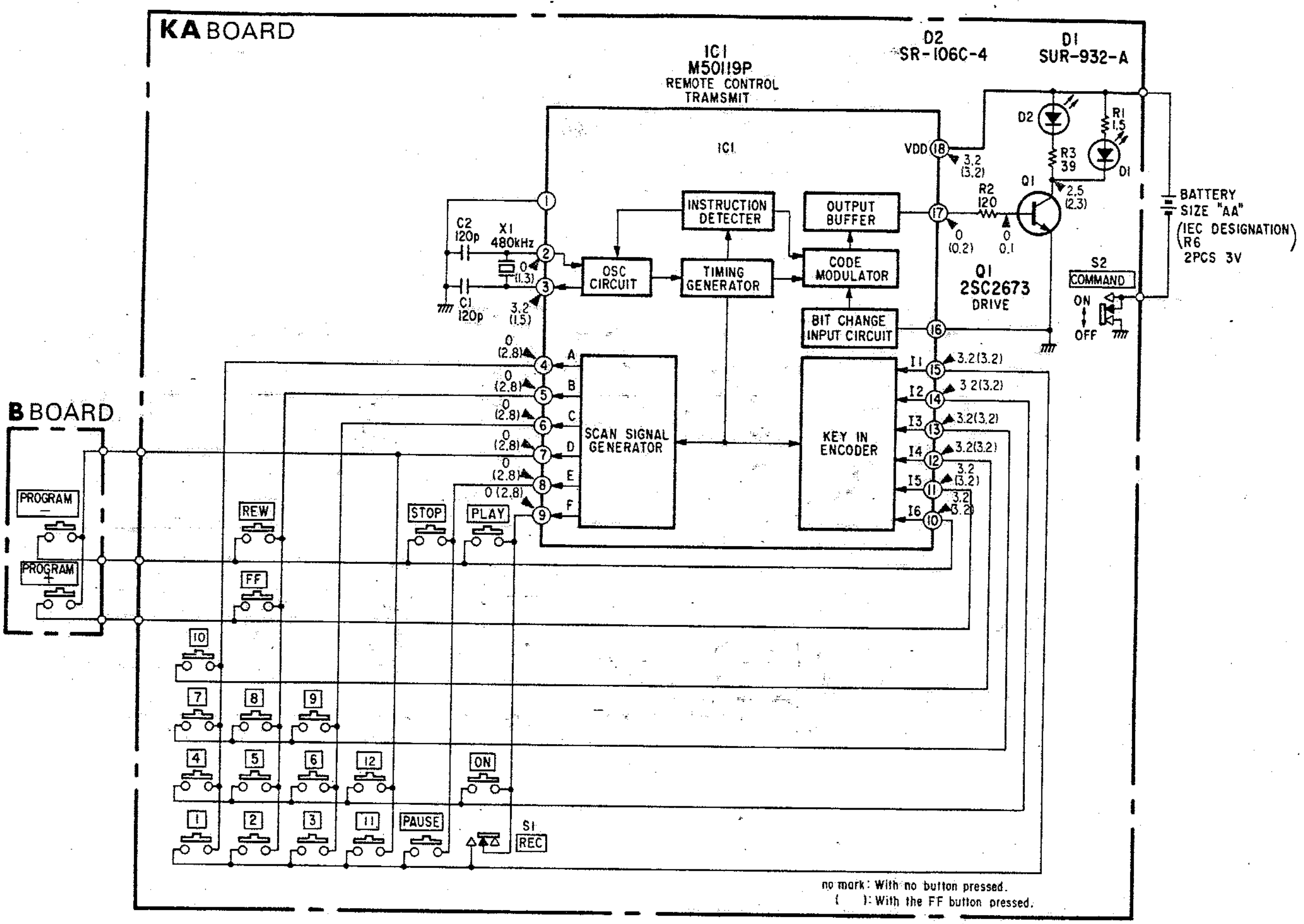
no mark : With no button pressed.
( ) : With the FF button pressed.

Note:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- ▨ : soldering side
- ▨ : B+ pattern
- ▨ : component side
- ▨ : Carbon pattern.

1 2 3 4 5 6 7

3 SCHEMATIC DIAGRAM


KA BOARD
B BOARD
IC1
M50119P
REMOTE CONTROL
TRAMSMIT
IC1
D2
SR-106C-4
D1
SUR-932-A
D2
R1
1.5
R3
39
D1
VDD
3.2
(3.2)
R2
120
Q1
2.5
(2.3)
BATTERY
SIZE "AA"
(IEC DESIGNATION
R6)
2PCS 3V
INSTRUCTION
DETECTER
OUTPUT
BUFFER
CODE
MODULATOR
TIMING
GENERATOR
OSC
CIRCUIT
BIT CHANGE
INPUT CIRCUIT
C2
120p
X1
480kHz
C1
120p
0
(1.3)
3.2
(1.5)
0
(0.2)
0
0.1
Q1
2SC2673
DRIVE
S2
COMMAND
ON
OFF
SCAN SIGNAL
GENERATOR
KEY IN
ENCODER
A
B
C
D
E
F
0 (2.8)
I1
I2
I3
I4
I5
I6
3.2(3.2)
PROGRAM −
PROGRAM +
REW
FF
STOP
PLAY
10
7
8
9
4
5
6
12
ON
1
2
3
11
PAUSE
S1
REC

no mark: With no button pressed.
( ): With the FF button pressed.

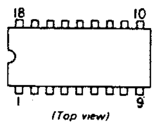
Note:

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- ——— : B+ bus.
- The voltage value is measured using a digital tester (10MΩ).

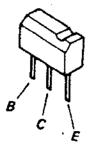
When indicating parts by reference number, please include the board name.

SEMICONDUCTORS

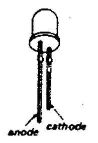
M50119P


18
10
1
9
(Top view)

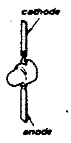
2SC2673



SLR932A


anode
cathode

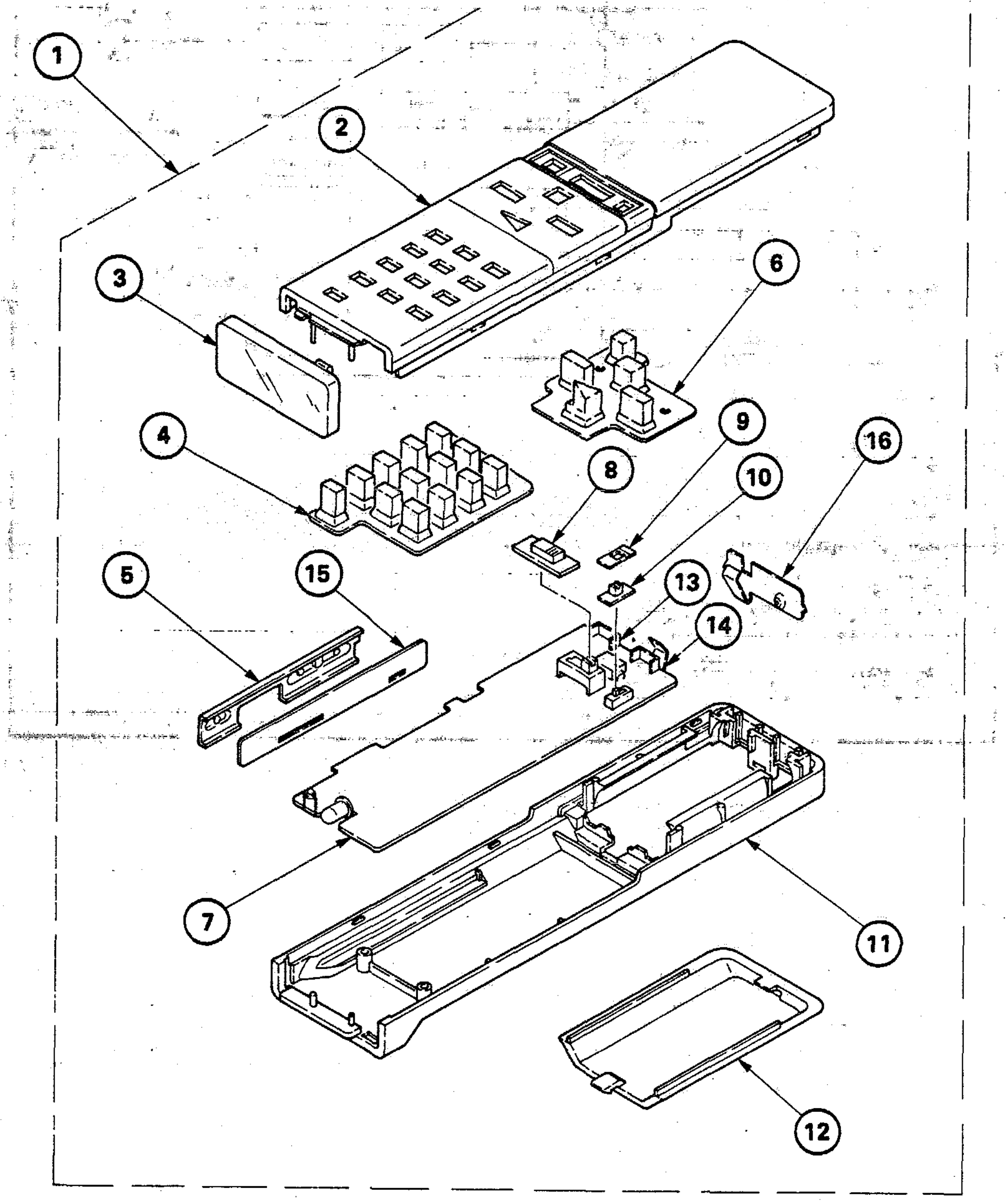
SR106C


cathode
anode

4. EXPLODED VIEW

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.



No.	ParT No.	Description	Remark
1	A-6765-565-A	COMMANDER ASSY RMT-230/SILVER	2-16
	A-6765-638-A	COMMANDER ASSY RMT-230/GRAY	2-16
2	2-383-130-01	CASE (UPPER), COMMANDER RMT-230/SILVER	
	2-383-130-61	CASE (UPPER), COMMANDER RMT-230/GRAY	
3	2-387-107-01	PANEL, COMMANDER (FRONT)	
4	2-383-128-01	RUBBER (A), CONTACT	
5	2-389-303-01	RUBBER (B), CONTACT	
6	2-383-129-01	RUBBER (C), CONTACT	
7	*1-612-946-11	KA BOARD	

No.	ParT No.	Description	Remark
8	2-387-101-01	BUTTON, RECORDING	
9	2-387-113-11	PLATE, COLOR	
10	2-383-127-01	BUTTON, SLIDE	
11	2-387-123-01	CASE (LOWER), COMMANDER (GRAY/SILVER)	
12	2-387-105-01	COVER, BATTERY (GRAY/SILVER)	
13	2-387-104-01	TERMINAL (B), BATTERY	
14	2-387-103-01	TERMINAL (A), BATTERY	
15	*1-612-165-11	B BOARD	
16	4-350-925-00	TERMINAL (C), BATTERY	

5. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- MF : μF, PF : μμF

COILS

- MMH : mH, UH : μH

Ref.No	Part No.	Description	Remark
	*1-612-946-11	KA BOARD *********	
	2-387-103-01	TERMINAL (A), BATTERY	
	2-387-104-01	TERMINAL (B), BATTERY	
		CAPACITOR	
C1	1-102-107-00	CERAMIC 120PF 10% 50V	
C2	1-102-107-00	CERAMIC 120PF 10% 50V	
		DIODE	
D1	8-719-912-39	DIODE SLR-932A	
D2	8-719-100-06	DIODE SR106C	
		IC	
IC1	8-759-600-07	IC M50119P	
		TRANSISTOR	
Q1	8-729-967-32	TRANSISTOR 2SC2673	
		RESISTOR	
R1	1-246-405-25	CARBON 1.5 5% 1/4W	
R2	1-246-772-00	CARBON 120 5% 1/8W	
R3	1-246-766-00	CARBON 39 5% 1/8W	
		SWITCH	
S1	1-554-364-00	SWITCH, SLIDE	
S2	1-553-977-00	SWITCH, SLIDE	
		CRYSTAL	
X1	1-527-476-00	OSCILLATOR, CERAMIC	

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*1-612-165-11 B BOARD
****

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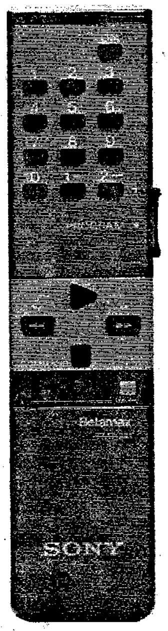
RMT-231

SERVICE MANUAL

EC Model

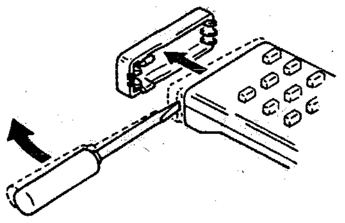


SPECIFICATIONS

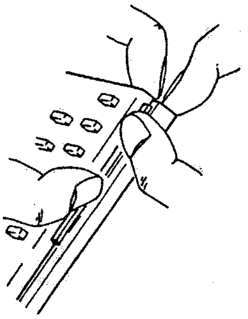
Remote Commander RMT-231

Remote control system	Infrared control
Power requirements	3V dc, 2 IEC designation R6 batteries (size AA)
Dimensions	Approx. 45 × 20 × 175 mm (w/h/d) (1$^{3}/_{4}$ × $^{3}/_{4}$ × 7 inches) incl. projecting parts and controls
Weight	Approx. 105 g (3.7 oz) incl. batteries

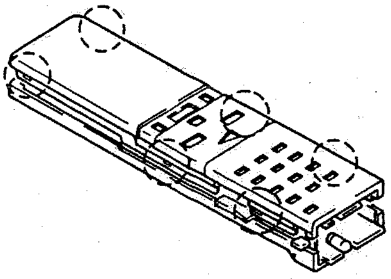
Disassembly



①
Remove the front panel by prying up with a screwdriver.



②
While pulling the lower case outward, lift the upper case and free the claw.



③
Free all 6 claws similarly.

REMOTE COMMANDER

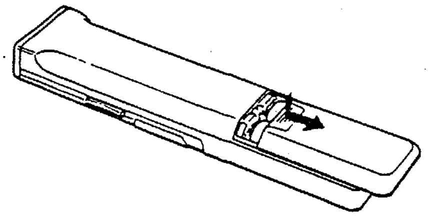
SONY®

1. REMOTE CONTROL OPERATION

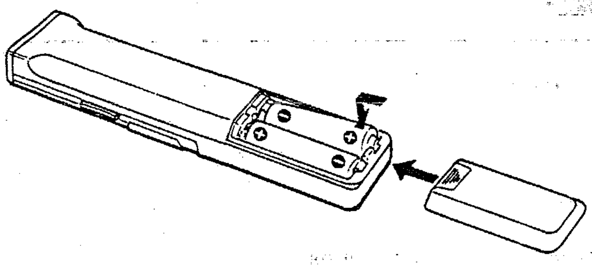
You can control almost all the functions of this video cassette recorder from your armchair using the supplied Remote Commander.

BATTERY INSERTION

1 Open the lid.



2 Insert two IEC designation R6 baterries with correct polarity.



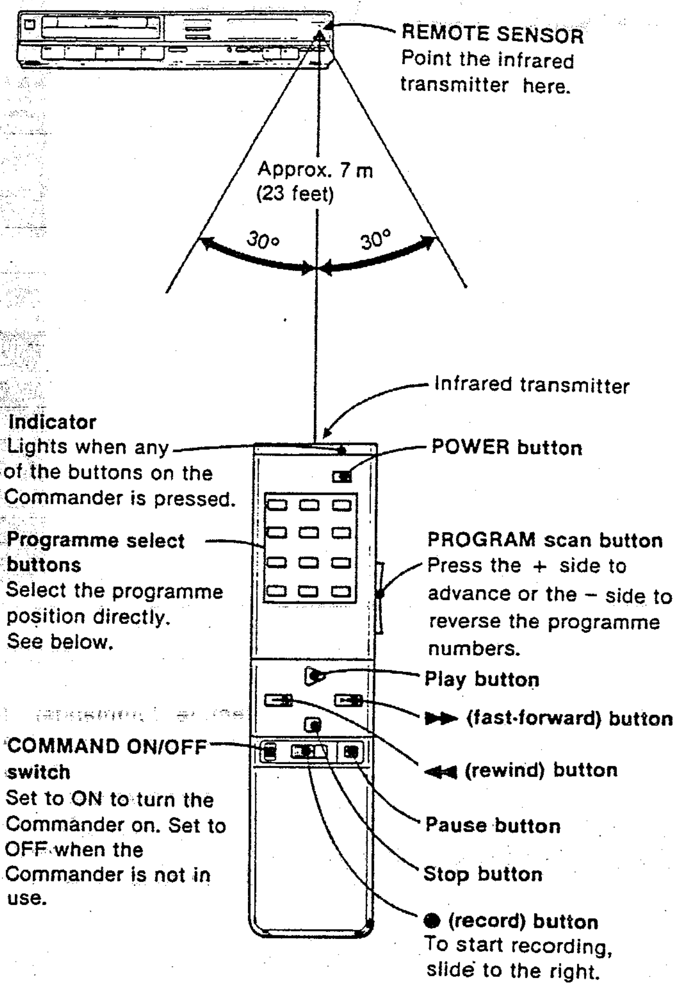
3 Close the lid firmly.

Battery life
In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the Commander are pressed.

If the Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Notes
- There should be no obstacles between the Commander and the REMOTE SENSOR of the recorder.
- The shorter the distance between the Commander and the recorder, the wider the angle within which the recorder can be controlled.

OPERATION

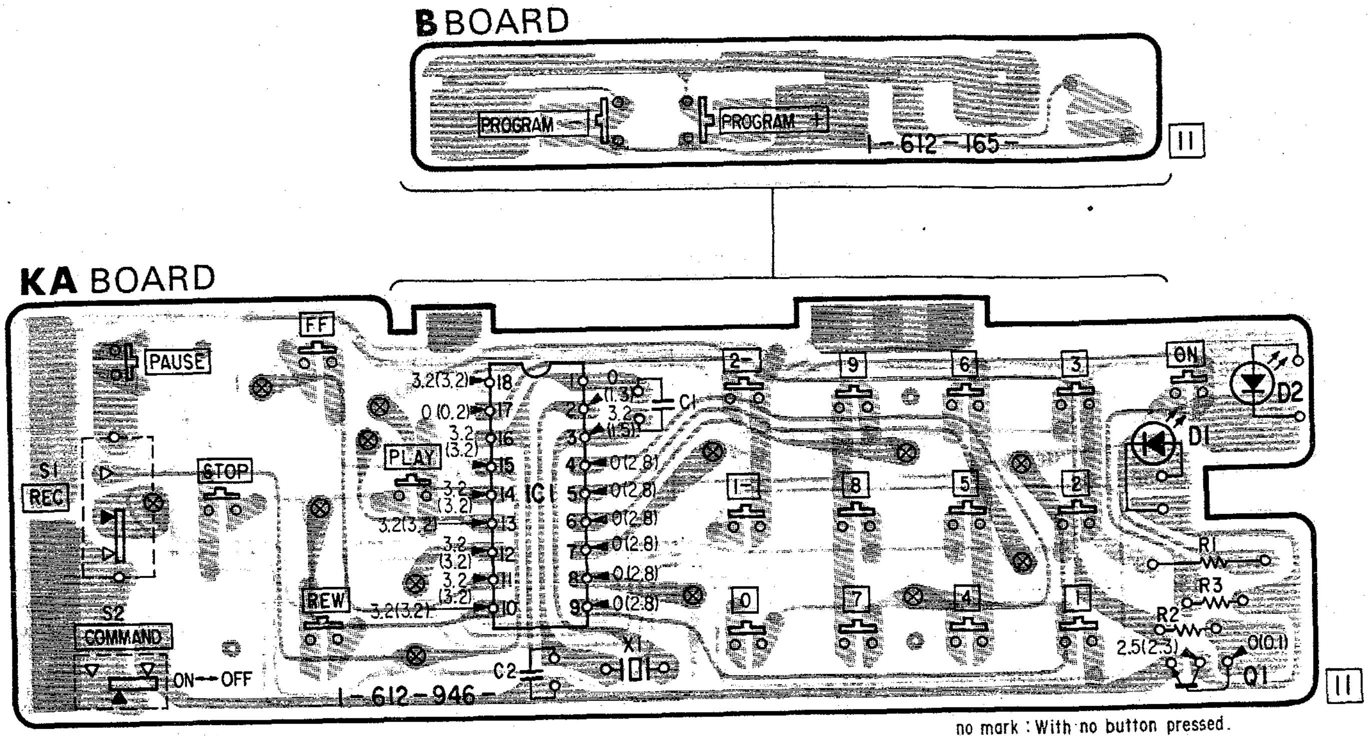

REMOTE SENSOR
Point the infrared transmitter here.
Approx. 7 m
(23 feet)
30°
30°
Infrared transmitter
Indicator
Lights when any of the buttons on the Commander is pressed.
POWER button
Programme select buttons
Select the programme position directly.
See below.
PROGRAM scan button
Press the + side to advance or the − side to reverse the programme numbers.
Play button
▶▶ (fast-forward) button
COMMAND ON/OFF switch
Set to ON to turn the Commander on. Set to OFF when the Commander is not in use.
◀◀ (rewind) button
Pause button
Stop button
● (record) button
To start recording, slide to the right.

How to press the programme select buttons
SL-F30EC
For programmes 1 through 9, press the corresponding single-digit button.
For 10 through 19, press "1-" for the tens-digit and then the corresponding single-digit button.
For 20 through 29, press "2-" and then the corresponding single-digit button.
For 30, press "0".
- If your do not press a single-digit button within several seconds after pressing "1-" or "2-", the previous programme position will be recalled.

SL-F30E
Press the corresponding button, 1 through 12.

2. PRINTED WIRING BOARDS

— Conductor Side —

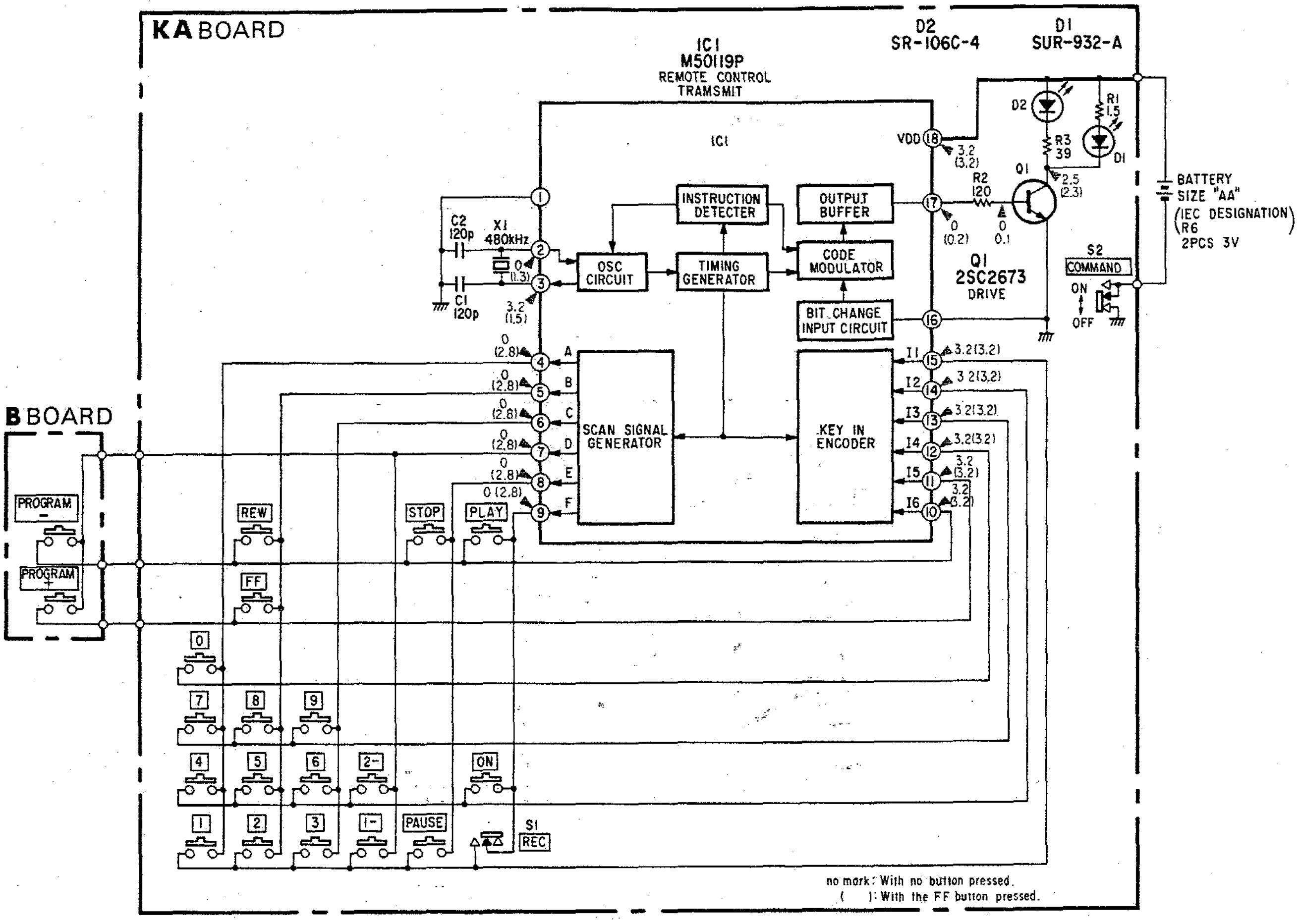

1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
B BOARD
PROGRAM −
PROGRAM +
1-612-165
11
KA BOARD
FF
PAUSE
S1
REC
STOP
PLAY
REW
S2
COMMAND
ON — OFF
IC1
3.2(3.2) 18
0 (0.2) 17
3.2 (3.2) 16
15
3.2 (3.2) 14
3.2(3.2) 13
3.2 (3.2) 12
3.2 (3.2) 11
3.2(3.2) 10
1 0 (1.3)
2 3.2
3 (1.5)
4 0(2.8)
5 0(2.8)
6 0(2.8)
7 0(2.8)
8 0(2.8)
9 0(2.8)
C1
C2
X1
1-612-946
2
9
6
3
ON
D2
D1
1
8
5
2
R1
R3
R2
0
7
4
1
2.5(2.3)
0(0.1)
Q1
11

no mark : With no button pressed.
( ) : With the FF button pressed.

Note:

- ○— : indicates a lead wire mounted on the component side.
- ●— : indicates a lead wire mounted on the printed side.
- ⊗ : Through hole.
- ▨ : soldering side
- ▨ : B+ pattern
- : component side
- ▨ : Carbon pattern.

3. SCHEMATIC DIAGRAM


KA BOARD
B BOARD
IC1
M50119P
REMOTE CONTROL
TRAMSMIT
IC1
D2
SR-106C-4
D1
SUR-932-A
D2
R1
1.5
R3
39
D1
VDD
3.2
(3.2)
R2
120
Q1
2.5
(2.3)
BATTERY
SIZE "AA"
(IEC DESIGNATION
R6
2PCS 3V)
INSTRUCTION DETECTER
OUTPUT BUFFER
C2
120p
X1
480kHz
OSC CIRCUIT
TIMING GENERATOR
CODE MODULATOR
0
(0.2)
0
0.1
Q1
2SC2673
DRIVE
S2
COMMAND
ON
OFF
C1
120p
0
(1.3)
3.2
(1.5)
BIT CHANGE INPUT CIRCUIT
SCAN SIGNAL GENERATOR
KEY IN ENCODER
A
B
C
D
E
F
0 (2.8)
I1
I2
I3
I4
I5
I6
3.2(3.2)
PROGRAM −
PROGRAM +
REW
FF
STOP
PLAY
0
7
8
9
4
5
6
2−
ON
1
2
3
1−
PAUSE
S1
REC
no mark: With no button pressed.
( ): With the FF button pressed.

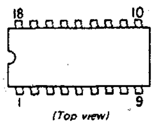
Note:

- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- ——— : B+ bus.
- The voltage value is measured using a digital tester (10MΩ).

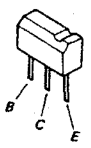
When indicating parts by reference number, please include the board name.

SEMICONDUCTORS

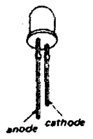
M50119P


18
10
1
9
(Top view)

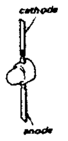
2SC2673



SLR932A


anode
cathode

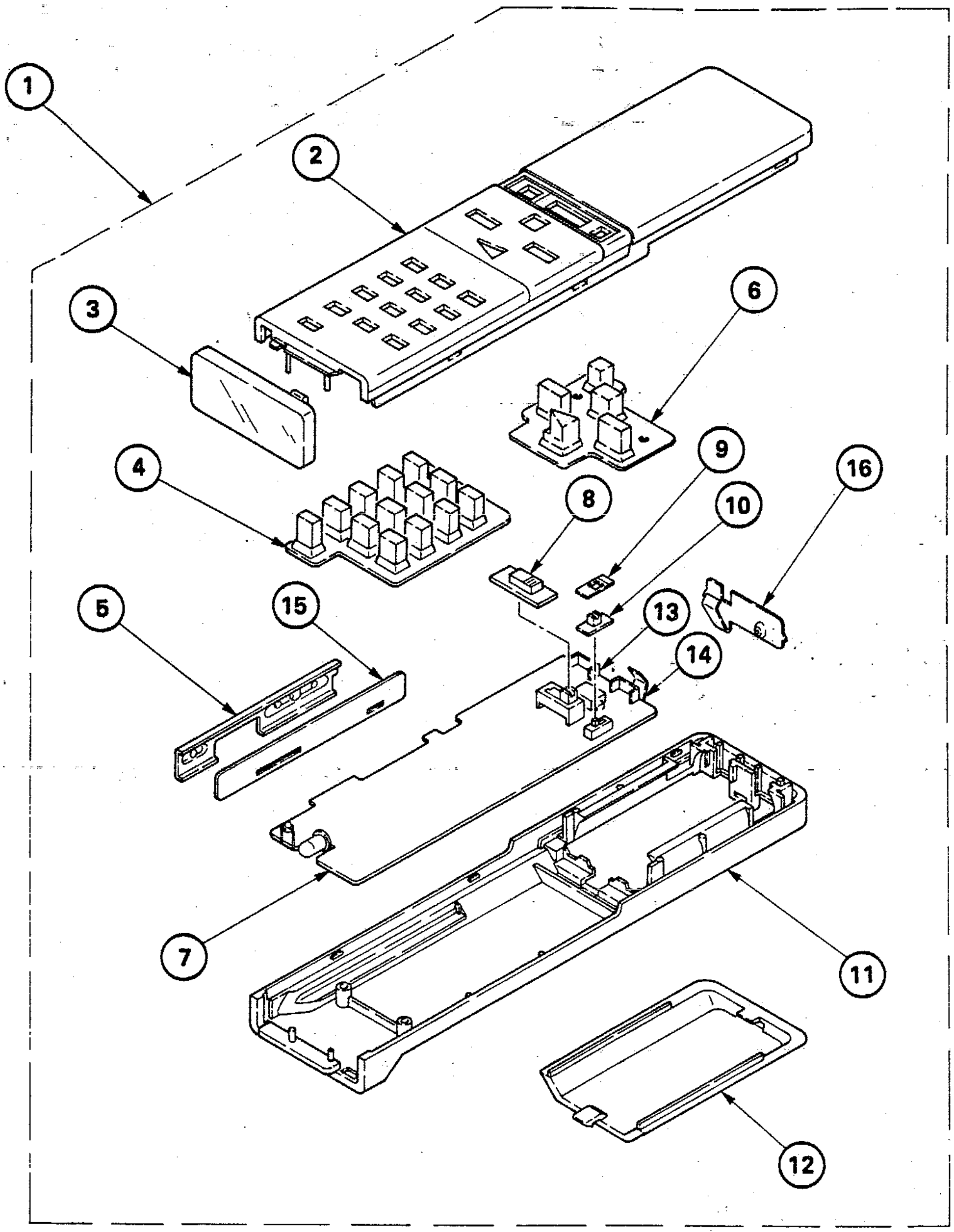
SR106C


cathode
anode

4. EXPLODED VIEW

NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.



No.	ParT No.	Description	Remark
1	A-6765-566-A	COMMANDER ASSY RMT-231/SILVER	2-16
	A-6765-639-A	COMMANDER ASSY RMT-231/GRAY	2-16
	A-6765-641-A	COMMANDER ASSY RMT-231/RED	2-16
2	2-383-130-11	CASE (UPPER), COMMANDER RMT-231/SILVER	
	2-383-130-21	CASE (UPPER), COMMANDER RMT-231/GRAY	
	2-383-130-41	CASE (UPPER), COMMANDER RMT-231/RED	
3	2-387-107-01	PANEL, COMMANDER (FRONT)	
4	2-383-128-01	RUBBER (A), CONTACT	
5	2-389-303-01	RUBBER (B), CONTACT	
6	2-383-129-01	RUBBER (C), CONTACT	
7	*1-612-946-11	KA BOARD	
8	2-387-101-01	BUTTON, RECORDING	
9	2-387-113-11	PLATE, COLOR	
10	2-383-127-01	BUTTON, SLIDE	
11	2-387-123-01	CASE (LOWER), COMMANDER (GRAY/SILVER)	
	2-387-123-21	CASE (LOWER), COMMANDER (RED)	
12	2-387-105-01	COVER, BATTERY (GRAY/SILVER)	
	2-387-105-21	COVER, BATTERY (RED)	
13	2-387-104-01	TERMINAL (B), BATTERY	
14	2-387-103-01	TERMINAL (A), BATTERY	
15	*1-612-165-11	B BOARD	
16	4-350-925-00	TERMINAL (C), BATTERY	

5. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- MF : μF, PF : μμF

COILS

- MMH : mH, UH : μH

Ref.No	Part No.	Description				Remark
	*1-612-946-11	KA BOARD *********				
	2-387-103-01	TERMINAL (A), BATTERY				
	2-387-104-01	TERMINAL (B), BATTERY				
		CAPACITOR				
C1	1-102-107-00	CERAMIC	120PF	10%	50V	
C2	1-102-107-00	CERAMIC	120PF	10%	50V	
		DIODE				
D1	8-719-912-39	DIODE SLR-932A				
D2	8-719-100-06	DIODE SR106C				
		IC				
IC1	8-759-600-07	IC M50119P				
		TRANSISTOR				
Q1	8-729-967-32	TRANSISTOR 2SC2673				
		RESISTOR				
R1	1-246-405-25	CARBON	1.5	5%	1/4W	
R2	1-246-772-00	CARBON	120	5%	1/8W	
R3	1-246-766-00	CARBON	39	5%	1/8W	
		SWITCH				
S1	1-554-364-00	SWITCH, SLIDE				
S2	1-553-977-00	SWITCH, SLIDE				
		CRYSTAL				
X1	1-527-476-00	OSCILLATOR, CERAMIC				

****

Ref.No	Part No.	Description	Remark
	*1-612-165-11	B BOARD ********	

****